IN THE UNITED STATES DISTRICT COURT

FOR THE NORTHERN DISTRICT OF OKLAHOMA

STATE OF OKLAHOMA, ex rel, W.A. DREW EDMONDSON, in his capacity as ATTORNEY GENERAL OF THE STATE OF OKLAHOMA, et al.

Plaintiffs,

vs.

CASE NO. 05-CV-329-GKF-PJC

TYSON FOODS, INC., et al.,

Defendants.

TRANSCRIPT OF PROCEEDINGS
JULY 29, 2009
BEFORE THE HONORABLE GREGORY K. FRIZZELL, DISTRICT JUDGE
MOTION HEARING, VOLUME II

APPEARANCES:

For the Plaintiffs:

MR. DAVID RIGGS
MR. DAVID P. PAGE
MR. RICHARD T. GARREN
Riggs Abney Neal Turpen
Orbison & Lewis
502 W. 6th Street
Tulsa, OK 74119

(APPEARANCES CONTINUED)

For the Plaintiffs:

MR. ROBERT A. NANCE
MS. KELLY FOSTER
Riggs Abney Neal Turpen
Orbison & Lewis
5801 Broadway, Extension 101
Oklahoma City, OK 73118

MR. LOUIS W. BULLOCK
Bullock Bullock & Blakemore
110 W. 7th St.
Suite 770
Tulsa, OK 74119

MR. FREDERICK C. BAKER
MS. ELIZABETH CLAIRE XIDIS
Motley Rice LLC
28 Bridgeside
P.O. Box 1792
Mount Pleasant, SC 29465

For Tyson Foods:

MR. ROBERT W. GEORGE
Tyson Foods, Inc.
2210 West Oaklawn Drive
Springdale, AR 72701

MR. JAY THOMAS JORGENSEN
MR. GORDON D. TODD
Sidley Austin LLP
1501 K St. NW
Washington, DC 20005

MR. PATRICK MICHAEL RYAN
Ryan Whaley Coldiron and
Shandy PC
119 N. Robinson, Rm 900
Oklahoma City, OK 73102

For Cargill:

MR. JOHN H. TUCKER
MS. THERESA HILL
Rhodes Hieronymus Jones
Tucker & Gable
100 W. 5th St., Ste 400
Tulsa, OK 74103

(APPEARANCES CONTINUED)

For Cargill:	MR. DELMAR R. EHRICH MS. KRISANN C. KLEIBACKER LEE Faerge & Benson 90 S. 7th St., Ste 2200 Minnaepolis, MN 55402
For Simmons Foods:	MR. JOHN R. ELROD MS. VICKI BRONSON Conner & Winters 211 E. Dickson St. Fayetteville, AR 72701
For Peterson Farms:	MR. A. SCOTT MCDANIEL MR. PHILIP HIXON MS. NICOLE LONGWELL McDaniel Hixon Longwell & Acord PLLC 320 S. Boston, Ste 700 Tulsa, OK 74103
For George's:	MR. WOODY BASSETT MR. VINCENT O. CHADICK Bassett Law Firm P.O. Box 3618 Fayetteville, AR 72702
For Cal-Maine:	MR. ROBERT SANDERS Young Williams P.A. P.O. Box 23059 Jackson, MS 39225 MR. ROBERT P. REDEMANN Perrine McGivern Redemann Reid Berry & Taylor PLLC P.O. Box 1710 Tulsa, OK 74101

PROCEEDINGS

JULY 29, 2009.

THE COURT: I apologize. I was waiting for the word that you were ready, and finally came out wondering what was the holdup. So I think we first need to address this Fisher declaration which was part of the motion to strike. There are only a few paragraphs in there that are, arguably, new, from my review: The paragraphs regarding the Ed Fite property controversy, paragraphs 11 and 12 explaining why the Fite property which was originally characterized as being poultry-free showed up as being part of the poultry PCA signature, now explained by Mr. Fisher as -- Dr. Fisher, excuse me -- as being the result of ground water because the Fite property apparently has, what, two springs on it. Those are paragraphs 11 and 12, so we'll have little mini trials within this whole matter.

Paragraph 16 is alleged to have been a summary of paragraphs 1, 2, and then 6 through 29 of the original Rule 26 expert report. Parts of it clearly are. Other parts are a bit different. This paragraph contains a statement that poultry waste contains substantial amounts of phosphorus, copper and zinc. I don't know that anyone would dispute that it contains substantial amounts of phosphorus.

But in any event, the statement that it contains substantial amounts of copper and zinc, it is a bit different from what he said in the first Rule 26 statement.

In addition, in the latter part of the paragraph, he lists eight different things, as he calls them, which he says are all methods for determining sources of contamination and the fate and transport of contaminants in an environment such as the Illinois River Watershed. So this raises the same basic question.

As I understand it, Mr. Bullock, with respect to these statements that are used to show that certain methodologies are common and to support a co-expert's opinion in a Daubert analysis, the argument essentially is that, Judge, even if this person isn't going to testify as to these matters, the Court ought to consider it in regard to the Daubert motion to determine the reliability.

MR. BULLOCK: I think that's correct. The other issue, of course, is being allowed to have rebuttal at this point in terms of arguments advanced by the defendants, and so an expert ought to be allowed to, as it were, answer the questions asked where those follow the report and challenge the report in some way. He ought to be able to answer that, I believe, Judge.

THE COURT: Who cares to respond here? I mean, it does raise bigger questions, too, as to the appropriateness of this type of forum for resolving these types of issues, but in any event, we're all here. Any response?

And I'm specifically referring to the Fisher

affidavit. I've done my best to identify that which appears to be new materials or potentially new materials. But how do the defendants respond to this argument that, Judge, we ought to be able to respond here, with regard to Fite, we want to be able to reply as to why the test showed up to be poultry contaminated on what was thought to be a pure piece of property on which Ed Fite never applied poultry litter?

MR. JORGENSEN: We really have just two thoughts, Your Honor. First, we believe your order was right. The Supreme Court itself, the Tenth Circuit, a number of courts have said the problem with new testing is it's never-ending, or new analysis or new anything. Then we want to say something back, then they want to say something back. So we think your order is right.

But on that specific issue that Mr. Bullock has addressed, the Fite farm and the allegation of that two wells contaminated the entire farm with bubbling poultry waste. If you want to let that in and we'll talk about it today, we would be fine with that. We would give Mr. Bullock what he wants. It is new, but we think it could go to the weight.

THE COURT: I think it's fair. It does raise a relatively interesting question.

MR. JORGENSEN: Right.

THE COURT: And then secondly, what about the remaining portions of the Fisher declaration appended as

Exhibit H? Any objection to its consideration in the matters here today?

MR. JORGENSEN: Just one moment, Your Honor.

THE COURT: Yes, sir.

MR. JORGENSEN: We're fine to talk about it, Your Honor. We feel strong in what we've got, and rather than waste time, we'd just rather move on with it.

THE COURT: Well, it does raise an interesting procedural question. I mean, how long does this go on? Which then raises the question: Maybe this is not the place where these sorts of issues ought to be resolved.

But we're here. The motion to strike plaintiffs' new and undisclosed expert opinions, number 2241, is denied with respect to the declaration of Jay Burton Fisher, Ph.D., appended as Exhibit H to the response.

I don't have the number to the Daubert motion on Dr. Olsen. I'd like to get for the record specifically what number that is.

MR. PAGE: Your Honor, it's -- David Page. It's document 2198.

THE COURT: Very well. 2198 dash what?

MR. PAGE: Well, it's Exhibit H, so it's 2198-5. Exhibit H.

THE COURT: Thank you very much. The record will reflect that that's denied.

Let's get into whichever of these Daubert motions you would prefer.

MR. JORGENSEN: Thank you, Your Honor. I think we'll start with Roger Olsen.

THE COURT: Very well.

Mr. Todd.

MR. TODD: Good morning. Just waiting for the PowerPoint to pop up.

THE COURT: Yes, sir.

MR. PAGE: Mr. Todd, do you have a copy of that? I have a difficult time reading that screen.

MR. TODD: Unfortunately, I only have one printout. You can see it on the screen here.

MR. JORGENSEN: I apologize for the delay, Your Honor.

THE COURT: Not at all. I apologize for my delay.

MR. TODD: Ready, Your Honor?

THE COURT: Yes, sir.

MR. TODD: Good morning, Your Honor.

THE COURT: Good morning.

MR. TODD: Your Honor, Dr. Olsen arrives in much the same boat as Dr. Harwood did yesterday. He is the State's other causation source-tracking expert. He, much as she, offers a novel theory of source tracking that was devised solely for this litigation, and it has been unreviewed. It's

not been peer reviewed. It's not been reviewed by anyone not connected to this litigation. Your Honor previously found it to be unreliable under Daubert . The Tenth Circuit affirmed that ruling, and we suggest the same ruling should obtain here.

Before I turn to the substance of Dr. Olsen's theory, though, Your Honor, let me touch briefly on the legal standard. And this is obviously well-known to Your Honor. But we heard some suggestion yesterday that the Daubert test goes purely to a methodology in the abstract; in general, whether someone somewhere has applied something similar in vaguely similar circumstances, and that's it.

Well, Your Honor, the State took that argument to the Tenth Circuit in this case when they appealed you and said that the district court had erred by striking -- by finding unreliable the specific application of a methodology in this case.

Now, the Tenth Circuit disagreed, and they wrote that "Any step that renders the analysis unreliable, renders the expert's testimony inadmissible whether the step completely changes a reliable methodology or merely misapplies that methodology." That's 565 F.3d. 780, Your Honor.

So what we're talking about here is not just whether principal component analysis generally could be used in some environmental case somewhere, but whether it's been used

appropriately and responsibly in this case.

Your Honor, the key Daubert issues with regard to Dr. Olsen's testimony are these: First, there is no general acceptance of his methodology. He's the only person who has ever discovered this through principal component analysis as a unique signature.

THE COURT: But is that his methodology? I mean, his methodology is independent of the specific target, right?

MR. TODD: Well, the methodology, Your Honor, what he proposes is a method for identifying poultry contamination. That's his words: A method for identifying poultry contamination. And what that method uses is principal component analysis.

He says if you go out into the environment and you find these 26 or 32, depending on what media you're looking at, constituents in the environment in certain proportions, in certain amounts and in certain ratios, then you can rest assured in this watershed that that indicates that poultry litter is present. That's his methodology. That's what he's offering the Court, a means of source tracking poultry litter, that no one else has ever done that.

In addition, Dr. Olsen's work, we would submit, is not reliable because it is inconsistent, it is internally inconsistent and illogical. And finally, Dr. Olsen's work does not flow logically from the data.

Now, Your Honor, let me get through the first slide, the first issue pretty quickly, the signature is novel. Your Honor, we go back to Dr. Olsen's first deposition in this case back in February of 2008. I put his testimony up here on the screen.

He was quite honest that no one else had ever done what he's done. No one else has ever applied principal component analysis in this matter in this watershed or to poultry litter and has found that this connection -- this combination of constituents and coefficients and ratios equal poultry litter in the environment.

He gave the same testimony at the preliminary injunction proceeding. Sat here in this Court and again was quite open that this poultry signature is specific to this basin and he's the only one who's ever found it. So it's novel, Your Honor.

THE COURT: So he's saying that it is specific to this basin, this particular signature?

MR. TODD: That's what he said at the PI hearing. Now, in part, I don't think he's looked for it anywhere else, so I'm not that sure he has a basis to say that it is anywhere else. But there's no effort to do that. Insofar as the work that he's done, that his colleagues have done, they've only looked for it here. So that's where that comes from.

Of course, they've only looked for it here because

they looked for it in the context of this litigation. We've made the argument and pointed out that this was developed solely for this litigation. And Your Honor has seen this memorandum before. And I don't mean to suggest that anyone has done anything inappropriately when I say that a methodology is litigation-driven. The Daubert test looks for indicia of reliability that are external to the litigation. Have other scientists who don't have the same incentives that paid experts do performed similar work, come to similar conclusions? And here, they have not. Rather, Dr. Olsen has been paid quite handsomely for his work. We believe the number is on the order of 8 to $9 million now for Camp Dresser McKee's work in this case. And he discussed his conclusions with counsel before he took any samples or ran any analysis. And so we think that goes very much, Your Honor, to reliability.

Finally, the next issue is that it's not been subjected to peer review. At the preliminary injunction proceeding, Dr. Olsen told you that he actually planned on submitting his methodology to peer review, but as he confirmed at his deposition in September of last year, he has not done so. And we believe that to still be the case.

So, Your Honor, Dr. Olsen's methodology arrives here today in much the same disposition as it was in the preliminary injunction hearing. It's novel, it's developed solely for this litigation, and it's not been peer reviewed or tested by anyone

unconnected with this lawsuit.

Let me move on to the next point, Your Honor, our principal criticism of Dr. Olsen, and that is that Dr. Olsen's work is inconsistent.

Before I turn to that though, let me just recap what is it that Dr. Olsen does, just so we're all on the same page. I've put up on the screen for Your Honor a chart, and you've seen these charts before. These are Dr. Olsen's scatter charts, scatter plots.

Dr. Olsen takes a dataset gathered through testing in the IRW, they take a bunch of samples and test them for different constituents and measure different things. He takes that data and he plugs it into a program called sYSTAT, S-Y-S-T-A-T, I think -- which is a statistical package which can run principal components. And he derives principal components -- he actually calculates five of them for each sample, and he takes those numbers, and what this plot shows is his principal component 1 plotted against principal component 2 score for each plot and he puts that on the chart. And that's what the PCA actually develops.

But the other thing we see here are these elongated ovals. Those are not calculated by the PCA. Those are not mathematically or statistically derived. Those are Dr. Olsen's own subjective evaluation of the data. Those come from his head. And that's important as we move forward.

What Dr. Olsen says with those circles, with those ovals, is that every sample in one of those ovals is characterized by a dominant source. The larger one he says is poultry waste. And the smaller one, he suggests, has a wastewater treatment impact.

Now, Dr. Olsen has consistently throughout this case seen this unique poultry signature. But that's one of the few things that is actually consistent about his testimony. Dr. Olsen had, I think, three years to get his story straight, to get his ducks in a row before this methodology was unveiled to the defendants. He had a lot of time to do his testing, to do his analysis, to figure out the source of his samples, what was impacted by what.

And as Your Honor knows, we learned of this -- we learned the guts of his methodology shortly before the PI hearing. So it's been -- defendants have been familiar with it for about 18 months now.

And over that time, Dr. Olsen has consistently seen in his data -- he has consistently seen a unique poultry signature, but a lot of other things have changed. He's used -- he's looked at different constituents; he's looked at different rotations of his charts; he's looked at the principal components from different angles; he's used different data.

Your Honor will recall shortly before the PI hearing, Dr. Olsen had to remove a bunch of bad data that his colleagues

had rejected, had to remove that from his PCA. He's made a math error that --

THE COURT: But that's not to be considered today. An expert is permitted to correct aspects of their opinion prior to submission to the Court, correct?

MR. TODD: That's absolutely correct, Your Honor, but what we submit it goes to is reliability. I'm a lawyer. I'm not a mathematician. I'm not a scientist. Your Honor said yesterday you've got a liberal arts background as well.

Our task is to figure out whether this is reliable, whether this is the kind of evidence that a court wants to let in. And we submit that an expert who consistently reaches the same conclusion but on vastly different data and manages to reach the same conclusion, despite having used data that is thrown out, or despite making math errors that are so fundamental that every expert in the case agrees they invalidated all of his mathematical results, we suggest that goes very much to reliability.

And what I'd like to do, Your Honor, the first part of my presentation, is walk you through several examples of how Dr. Olsen has consistently had to force his conclusion to match new and evolving data, if I may.

So let me go right into the first one, Your Honor. The crux of Dr. Olsen's analysis is this PC score. PC1, he says that equals poultry litter, that's poultry impact.

At his February 2008 deposition -- this is the first time we heard about PC scores -- Dr. Olsen said that anything higher than a PC score of one, a PC1 score of one, up to a range of about nine to ten, well, that was poultry impact.

Then in his Rule 26 report, he told us that it's actually 1.3. He honed it down a little bit. That was fine. PC1 larger than 1.3. Any sample measuring higher than PC1, 1.3 equals poultry impacted.

Then at his September 10 deposition when Mr. George spent two days questioning him, Dr. Olsen sharpened that even further. He said, in fact, it's 1.30226. He took it to five decimal places. But then in literally that same breath, he told us, but there may be a few minor exceptions. And we'll talk in a minute, Your Honor, where those minor exceptions came from, why he admitted that those existed.

And then a little later in the deposition -- this whole side, Your Honor, has suggested they put a shock collar on me, but there's going to be a debate over who gets to hold the clicker. I think Mr. Jorgensen is probably going to win that. Maybe Your Honor should have the clicker.

THE COURT: I think we allow Terri to do it.

MR. TODD: Throughout the depositions, Your Honor, I had a standing agreement with the court reporter that she should kick me in the shin when I did this, and my right shin was bruised for quite a while. But, Terri, I apologize.

Back to the fun. After having told us that the PC score was accurate to five decimal places, Mr. George asked Dr. Olsen: Well, so is any sample under that not poultry impacted? He said, no, I can't say that. They could be poultry impacted, too, but I can't tell you.

So Mr. George said, well, can you tell us if any sample is not poultry impacted? He said, well, maybe the reference samples, maybe the stream -- samples taken from streams where there hasn't been a chicken there in a million years, maybe those are not impacted.

So basically we came out of that deposition with everything, everything in the IRW being poultry impacted despite having a PC1 score cutoff of accurate to five decimal places.

And then the final contribution, Your Honor, was the February 2009 errata that Dr. Olsen served in which he actually came up with two different cutoffs. He never explained why he went from one cutoff to two cutoffs, but suddenly it was 2 for surface water and 2.6 for groundwater. And so the core criterion in Dr. Olsen's evaluation has morphed over time and it's changed over time. And I'd like to show Your Honor why; why that is, is the data has changed.

THE COURT: All right. Now, what impact -- as I was reading all this -- what impact did the logarithmic change have to these scores? Did it have any?

MR. TODD: It did, Your Honor. And I can actually -- that was going to be the last thing that I talked about, but I'm happy to go straight there now, if you'd like to.

THE COURT: I was trying to reach back into junior high mathematics and see if I could dig log paper out of the recesses of my mind, and I vaguely recall that it would have an impact numerically. So if you could explain that to me.

MR. TODD: Jay, could we go to slide 23, please.

The way this came about -- let me just set the background first. The way this came about is that Dr. Olsen made an error. Basically he performed his PCA analysis with log transformed data. It's just an easier way to use numbers if you would take them on a log scale. But once you run the PCA, you come out -- what it produces is something called a PCA factor score, which you then have to take and apply back to your original data to get the actual PC score, the 1.3, the 2.

But multiplying or using a log value with a nonlog value is not something you should do. He forgot to take the log values of his original data. He forgot to log transform those before doing that calculation.

THE COURT: I see.

MR. TODD: So our experts, Dr. Cowan and Dr. Johnson, both noticed this and they point it out in their reports. And Dr. Olsen, to his credit, said, yes, I made a mistake. And so he submitted the February 2009 errata which purported to fix

the mistake.

THE COURT: Would that not explain the change in the scoring?

MR. TODD: It wouldn't, Your Honor. And let me make a couple of points on this. First, Dr. Olsen acknowledged -- or Dr. Olsen made this mistake in every single one of the runs that he included in his expert report. I want to say there's about 30 of them. These are the SW, SD, all the different runs are in his report.

THE COURT: Until you pointed the mistake out and he reran it.

MR. TODD: He only fixed two of them. His errata only addresses SW3 and SW17.

THE COURT: I see. So that's why there's reference to these other important runs that they've dropped.

MR. TODD: Exactly.

THE COURT: They're only focusing on the two because those are the only two that have been transformed so that logarithmic data is both in the numerator and the denominator.

MR. TODD: Exactly. So by his own admission, the other 28 or however many there are, are mathematically invalid.

THE COURT: So why have the other two or three been dropped?

MR. TODD: I couldn't tell you, Your Honor. He doesn't tell us.

THE COURT: Well, they were described as important runs, right?

MR. TODD: Yeah. Let me walk through that. He identifies four as important, and those are the ones that are the basis for the conclusions in his report. He has conclusions as to water and as to solids. The two important -- the ones in his errata are the two water runs. He drops solids completely. But in his report, he also talks about a whole host of --

THE COURT: But if he dropped solids, he has a new standard for solids, does he not?

MR. TODD: No, Your Honor, he now has two standards for water.

THE COURT: Oh, I'm sorry.

MR. TODD: He's got one for surface water and one for groundwater.

THE COURT: Thank you.

MR. TODD: But strictly as to water, if all he did was change -- was change the log, he would conform one set of data and then reperform his calculation, as we understand it, the cutoff should have come out the same.

What this does, Your Honor, is it underscores how the cutoff, what lets him draw those ovals, is not the product of the PCA, it's the product of his own subjective evaluation.

He decided, for reasons unbeknownst to us, that with

the new math, the new plots, he had to pick a different cutoff for groundwater.

We have some speculation as to why he did that. It allowed him to pick -- to have the same percentage of samples as being impacted as being unimpacted. But that's our speculation, Your Honor. We don't know why he did that, but it's not mathematically required. So that goes to the water. The solids, he ignores completely.

But the other thing he doesn't do in his errata is he doesn't revisit all of the other runs that are discussed in his report.

And this is important because Dr. Olsen tells you in his report that his principal runs and the conclusions he draws are reliable, are trustworthy because he ran all these other runs, and they were sensitivity runs and they were scoping runs and they were testing runs. And he used different permutations to see how different data combinations would affect his outcome. And he consistently reached the same conclusion: They confirmed his poultry signature. But he doesn't revisit any of those with the new data. He doesn't fix the error. So all Your Honor is left with is these two principal runs hanging out there with no support.

That's the problem, Your Honor.

Let me touch a little more on the errata, since we're there.

THE COURT: The two runs that were dropped were solids and what else?

MR. TODD: The rest of them were additional water runs and additional solid runs, but he didn't identify them as principal or as important runs; he calls them sensitivity analyses. He suggests that they were runs that he did to confirm that his principal runs were accurate, were important, but he never revisited them.

THE COURT: Does he explain how he differentiates between the principal runs and the other sensitivity runs?

MR. TODD: That's another point we make in our pleadings, Your Honor: He doesn't. He seems to just pick them, you know, out of the air. Why SW3 and SW17 are the important ones instead of SW1 and SW24 -- I'm not even sure there is an SW24 -- but you get my point. He doesn't explain why those are the principal runs. Perhaps Mr. -- whoever argues for the State could do so today.

The other thing he tells the Court in his errata is that it was simply a programing error, this failure to log transform the data. It was just a programing mistake, and it had no effect on the outcome.

If you bore down into the data, Your Honor, it actually does have a substantial fact on the inner workings of his analysis. This slide here shows a shift in the surface water runs, SW3, from 1.3 to 2. Making that change changed the

classification of 64 different samples. 64 samples were either -- that Dr. Olsen previously told the Court were poultry impacted that are now not poultry impacted, or he previously said were not poultry impacted that now are poultry impacted.

THE COURT: Now, go back to that same slide. Would the oval be applied normally to this plotting of data?

MR. TODD: That would be his next step, Your Honor. This is his revised scores plot for SW3. We just didn't put the ovals on this one.

And what's interesting, if I may continue --

THE COURT: Yes.

MR. TODD: And what's interesting -- if I may continue, Your Honor.

THE COURT: Yes.

MR. TODD: What's interesting about these plots is, you'll see two maps of the IRW here; we've plotted on here the scores that change. And as Your Honor can see, they plot all across the water, all across the watershed. They're not clustered anywhere in particular. These are -- on the right are points that were previously impacted -- I'm sorry, previously not impacted that now are impacted. And on the left is the converse of that: Previously impacted that now are not impacted.

And this affects the data underlying Dr. Olsen's conclusions. He previously concluded that every single sample

that he took from Lake Tenkiller was poultry impacted.

Well, the February 2009 errata changed that by 30 percent. That's a pretty substantial change for just a programing error, Your Honor.

Let's do the same analysis with the groundwater. Here we've got the same map, Your Honor, but this shows where the 95 samples, groundwater samples changed. Again, they plot across the IRW, they're not clustered anywhere, there's no rhyme or rhythm to them.

And again, Your Honor, this changed substantially the data that Dr. Olsen was getting from various sources.

This slide shows that the deltas -- but the bottom line is that the GeoProbe samples, the number that he claimed were poultry impacted, decreased by 23 percent. The spring-impacted samples increased by 16, and the existing well impacted decreased by 27 percent.

MR. PAGE: Your Honor, I hate to interrupt, but if I could just inquire where these last set of five or six slides were put in the response to the Daubert motion.

MR. TODD: These are all in Dr. Olsen's -- sorry, Dr. Johnson's report and his errata -- or his declaration.

MR. PAGE: Is it attached to your response?

MR. TODD: Truly, I'm not sure because we put these slides together as demonstratives for the argument today, but the substance --

THE COURT: All of this data is contained in Johnson's report?

MR. TODD: That's correct, Your Honor, and the declaration that he put in.

MR. PAGE: And the demonstratives are also in the report, these exhibits?

MR. TODD: No. We put these together as demonstratives for this argument.

MR. JORGENSEN: No, that's not true. The exhibits are. They're in there. The only thing that's new is the PowerPoint.

MR. TODD: The PowerPoint, how --

MR. PAGE: The plots are all in the Johnson report?

THE COURT: Do we have any way of telling Mr. Page where they are in this --

MR. PAGE: In the response.

THE COURT: In the response?

MR. TODD: They would be in the -- Your Honor, everything that I've just covered is set out in Exhibit 12 to our motion to strike Dr. Cowan's testimony. You'll see all these charts.

MR. PAGE: Thank you, Mr. Todd. I appreciate that, Your Honor.

MR. TODD: You're quite welcome, Mr. Page. I'm sorry I didn't have that at my fingertips.

THE COURT: Thank you.

MR. TODD: And that's actually all I had to say about that, Your Honor. Our basic line is that Dr. Olsen's errata had a substantial effect on his data and should have had an effect on his conclusions and is an example of him being inconsistent.

Now, let me go back, Your Honor, to talk about a couple of other examples, a few other examples of where Dr. Olsen seems to be forcing his conclusion onto the data.

Your Honor may recall at the PI hearing there was some question as to whether there is a distinct cattle signature in the IRW.

Let me take you back on this slide to Dr. Olsen's deposition on February 2, 2008. At that deposition, Dr. Olsen was insistent that he could see a unique cattle signature. And this was important because it allowed him to look at other samples and say, I know what a cattle signature looks like, and it's not here; the only thing here is poultry.

And I put this slide together, Your Honor, I would say I had about a dozen times that he said that. I've only given you two. But he was insistent that in the IRW, he sees a definitive cattle signature in a handful of samples, and that allows him to make this distinction.

I'll let Your Honor read that and then I'll move on.

He was extremely emphatic about that. He said he

went to certain samples that he knew were cattle impacted.

Then came to the PI hearing, Your Honor, and he told you the same thing. Again, he said, I went to specific samples that I knew had cattle waste in it, and I could see a distinct difference, particularly with the poultry waste. So I knew what I was looking for, and it just wasn't a dominant signature across the basin.

So he's saying, I know what the cattle signature looks like, I know it when I see it, and it's not in these other samples.

Let's move forward to April, 2008. And this is where Ed Fite's farm becomes relevant, Your Honor. Plaintiffs went out to Ed Fite's farm because they had identified it as a location where poultry litter had not been used. They wanted to gather cow samples, cow pie samples. And while they are out there, they also gathered two edge-of-field runoff samples, and they characterized these as cattle edge-of-field samples so they would have something to compare to the poultry edge-of-field samples.

What you've got on the slide here is Camp Dresser McKee's field notes from that sampling where it says, "no chicken waste to property applied." That's what Ed Fite told them. That's what Dr. Olsen knew when he ran his analysis.

So they go back to the lab and they take these cattle-only edge-of-field samples and they run them through the

process.

And what happens? They plotted right in the middle of Dr. Olsen's poultry edge-of-field samples.

Well, this, of course, would be inconsistent with Dr. Olsen's testimony that there is a unique cattle signature. And so Dr. Olsen and his staff spend a day or more trying to break out the cattle samples.

This is a back-and-forth with Dr. Olsen and one of his colleagues. Dr. Olsen says, I think we should run an edge-of-field-only sample -- or edge-of-field-only run and see if the cattle will break out. The cattle samples, it turned out, didn't break out. So they looked at the chemistry to see if there was some way of distinguishing these samples.

And then they did something interesting. Dr. Olsen's testimony, Your Honor, is that the signature consisted of 26 variabilities, 26 constituents, that's what makes up his signature. They tried running fewer variables. They took it as low as 14 to see if they could come up with some permutation that would support Dr. Olsen's PI testimony that there was a distinct cattle signature. Well, Your Honor, they were unsuccessful.

So we move forward to Dr. Olsen's report, his Rule 26 report in this case, where we see no discussion of the distinct cattle signature. In fact, we see no discussion of the cattle edge-of-field samples. What Dr. Olsen tells us now is that

cattle data plots vary in a varied manner across the scree plot, and so there is no clear signature that can be identified for cattle.

He attached to his report a number of charts. Let me show you one of them here, Your Honor. I'm sorry, when you're done reading, of course.

THE COURT: Two questions. I anticipate from what I've read, number one, they'll say the cattle signature is impacted or the potential cattle signature is impacted by poultry-influenced forage, because apparently Fite fed his with hay grown in the IRW, which presumably had been fertilized by poultry. That's number one.

Number two, as I understand it, we have springs that have leached the poultry contaminants, and the cows drink that water. So your response?

MR. TODD: Yes, Your Honor. That's why this goes to reliability, because Dr. Olsen has consistently changed his methodology, changed his conclusions or changed the way he uses the data to continue to reach the same conclusion.

And this is, of course, the problem with bolstering and you come back later and do more field work. They went to the Fite farm specifically to get cattle-only samples. They should have looked. That was their opportunity to see if these springs were there, if these other impacts were there. But they didn't.

They recorded that no poultry litter had ever been put down, and that's was what was known to Dr. Olsen at the time he did this analysis.

The question is whether at the time he wrote a Rule 26 report sharing this opinion whether what he was telling you was consistent with the data known to him at the time.

And as to the subsequent work, Dr. Fisher apparently went back to the farm and they identified a spring, Your Honor. And we put this in our reply brief and we actually gave you all the photographs and the field notes to accompany the most recent sampling because it's very interesting reading, Your Honor.

They found a spring, which if you look at the GIS coordinates, appears to be about a half mile away from the field. And this spring was really -- hard to even call it a spring; it's a mud puddle. They had to dig into the ground to get a single water sample from this thing, but yet they claim that water from this mud puddle flowed half a mile or so and impacted a field that had only been inhabited by cattle and put a dominant poultry signature on that spring.

Now, Your Honor, maybe that's what happened.

THE COURT: Well --

MR. TODD: Maybe that's what happened, but the fact is that -- Your Honor, go ahead. I'm sorry.

THE COURT: Well, I take it you're from D.C.

MR. TODD: I am, Your Honor.

THE COURT: Well, I graduated from high school in D.C., so I don't hold any prejudice against those from D.C., but in any event, springs run here in Northeastern Oklahoma more at certain times of the year than others. So it's not impossible for that to have occurred.

MR. TODD: That's true, Your Honor, and my assumption -- and I am from D.C. and I'm not totally familiar with springs, but I would think they would run more in November than in the summer because it's rained more. This was in November that the sampling was done. This wasn't the middle of the summer.

THE COURT: So the sample was in November?

MR. TODD: We can look at the exhibit, but the date is on there. My recollection is that it was November that this was done.

But I don't mean to quibble as to which part of the story is right. Our point is that there are several stories going on here. And at the time Dr. Olsen wrote his Rule 26 report, it was inconsistent with the data known to him.

Let me show you the next slide, which I think will help you, will help underscore this.

This is a plot that Dr. Olsen attached to his Rule 26 report. And if you squint real hard and look at the bottom, you can see the first thing on the legend is edge-of-field

sample. Doesn't say poultry edge of field; doesn't say cattle. There's no separate entry for cattle edge of field; it just says edge of field, all the black diamonds. Two of those black diamonds, Your Honor, are the cattle samples, the cattle edge-of-field samples before Dr. Fisher went back and did his subsequent analysis. That's how Dr. Olsen treated the inconsistent data at the time he wrote his report.

And we suggest, Your Honor, that that should call into question the assumptions he was making.

THE COURT: Go back a second.

MR. TODD: To which slide, sir?

THE COURT: The one you just showed me. Now, these were originally his cattle edge of field, or is this what was appended to the Rule 26?

MR. TODD: This was attached to his Rule 26 report. This is one of his plots of the SW3 data. And you can see that the samples are coded by their source. So you've got high flow, low flow, reference samples and the black diamonds. The black diamonds are the edge-of-field samples. And he nowhere breaks out the two cattle samples. Nowhere in his report does he say, we took these two samples from Ed Fite's farm, we believe they're cattle impacted. These are cattle edge-of-field samples, not poultry edge-of-field samples, that's what's known to us right now; but yet we're going to go ahead and plot them with the edge-of-field samples generally.

So we asked Dr. Olsen about this at his September deposition. And we asked him specifically -- throughout the testimony here, we asked him about the existence of the cattle signature which had been dropped from his report. And he now confirmed that, in his view, it just isn't there, period. There's no cattle signature.

And at his deposition, he offered the speculation that Dr. Fisher's report was designed to confirm with his new analysis, his new field work.

Mr. George asked him, sir -- Mr. Olsen said, well, maybe they were poultry contaminated. Mr. George said, sir, are you speculating? And Dr. Olsen said, yes, I am.

The fact of the matter is, Your Honor, that what he wrote in his report was inconsistent with the data known to him at the time.

I have a couple of other examples of this, Your Honor. Whenever you're done, let me know and we'll move on to the others.

THE COURT: So the last three lines here are specifically referring to the Fite samples?

MR. TODD: Yes, Your Honor. There's a long colloquy which I didn't want to --

THE COURT: Go ahead.

MR. TODD: The next point I want to talk about, Your Honor, is wastewater treatment. The plaintiffs gathered

four samples, took samples in four locations which were designed to characterize wastewater treatment. Three of them came straight out of the end of a pipe that comes out of a wastewater plant, that's just a pure effluent sample. The fourth one from the Lincoln wastewater treatment plant was actually a river sample that was taken a short distance downstream from the effluent pipe. But the four of these were designed to characterize wastewater treatment, to let Dr. Olsen know what that would look like perhaps as distinct from poultry signature.

In his expert report, Dr. Olsen classified all of the wastewater treatment plant samples as poultry impacted because they all had a PC1 score of higher than 1.3, and so that is what his methodology demanded that he do.

So we asked him at his deposition, Dr. Olsen, is this correct? Are these wastewater effluent samples actually poultry impacted? And he said, I actually -- I included inadvertently some of the wastewater treatment plant discharges, so I need to take those out of my analysis. I would say -- his words -- I would say that these probably weren't contaminated by poultry. So that seemed fine to us.

Then we fast forward to the declaration that Dr. Olsen submitted as part of the State's response to this motion, and the wastewater effluent samples are now again classified as poultry impacted.

And it is his theory, based on Dr. Fisher's latest field work, new field work, that now the poultry -- the wastewater treatment samples may be contaminated by poultry-related constituents because maybe some water from chicken farms -- and I'm not sure if this is house water or water from the barns or whatever -- maybe it gets to the wastewater plant.

So, again, Your Honor, the treatment has varied and hasn't always been consistent with the data.

THE COURT: I take it you haven't been able to take any depositions with regard to that.

MR. TODD: Exactly, Your Honor.

THE COURT: I saw something yesterday about some permitting which indicates that poultry processing waste, or effluent, was, in fact, permitted to go through some of these wastewater treatment plants; is that correct?

MR. TODD: Exactly, Your Honor.

THE COURT: That's a recent revelation, correct?

MR. TODD: That's what's in the Fisher declaration. This is why, as Mr. Jorgensen said, we're happy to talk about this because it's relevant to the way Dr. Olsen's methodology has developed.

Dr. Fisher recently, long after his report --

THE COURT: Just within the last month; that was a June declaration, correct?

MR. TODD: Mr. George has clarified for me, it's actually processing of meat, not waste from chicken farms or water from chicken farms.

THE COURT: All right. That's all very interesting, and it is before the Court. Go ahead.

MR. TODD: The last one I want to talk about, Your Honor, is Tahlequah.

THE COURT: Now, we don't have anything in the record to indicate it's from a meat processing plant, correct?

MR. TODD: Well, Mr. George, in his capacity as counsel, maybe will be familiar with those, those NPDS permits, which is what Dr, Fisher looked at.

Do you want to speak to that?

MR. GEORGE: I believe, Your Honor, and it may be in the record in connection with another motion, but I don't think there's any dispute that the only contribution that's been identified to wastewater treatment plants has been done by Dr. Engel related to poultry and its poultry processing plants.

If Your Honor wants me to try to find a reference in the record, I'll be happy to.

THE COURT: Well, it may have been the Fisher recent declaration where I saw a reference there. Do you recall that, Mr. Todd?

MR. TODD: I'm sorry, Your Honor?

THE COURT: Do you recall a reference in the recent Fisher declaration?

MR. TODD: Yes. Give me a minute and I'll tell you exactly where it is, Your Honor.

It is in paragraph -- it's paragraph 17 and 18 of his declaration.

THE COURT: See if I can find it.

MR. TODD: And then it's referred to, I think, in paragraphs 19 and 20 of the new declaration that provided the citations where the stuff came from.

THE COURT: This is a constantly shifting set of facts. But he does say poultry processors, so "processors" would imply a meat processing plant.

MR. GEORGE: That's correct.

THE COURT: Go ahead.

MR. TODD: Thank you, Your Honor. The final thing I want to talk about is Tahlequah, Your Honor. The plaintiffs took five samples, five water samples in the middle of Tahlequah. And at the bottom left-hand part of the slide here, Your Honor, you can see the PC scores for those samples. Each one of them came back higher than 1.3.

So by Dr. Olsen's analysis, they should have been poultry impacted. The red dot/green dot map that you're looking at here shows the red points are higher than 1.3, poultry impacted. The green dots are less than 1.3, not

poultry impacted.

But if Your Honor will look at the left-hand side of the screen, you'll see that all five Tahlequah samples are green. They're not red, as the analysis suggest that they should have been.

So we asked Dr. Olsen at his deposition about this. First we had the long colloquy about the wastewater, and he admitted he made a mistake there. But he affirmed, after that discussion, he affirmed that any other sample that was higher than 1.3 was poultry impacted.

Then Mr. George asked Dr. Olsen about Tahlequah. He said, Sir, will you turn to your table that reports your principal component one scores. And Dr. Olsen knew exactly where Mr. George was going. And he said, "Yeah. Let me cut you short here, now that we brought those up. Those were above 1.3, but based on the spatial analysis, I decided that those were not impacted by poultry."

So, Your Honor, Dr. Olsen changed the classification of these scores, because the fact they were from Tahlequah where Dr. Fisher's poultry house density analysis showed zero poultry activity. Dr. Olsen changed the coding to -- maybe "hide" is too strong a word, but to massage the facts on the ground to his theory that anything higher than 1.3 was poultry impacted.

Your Honor, a couple of more steps on this one.

In the February, 2009 errata, Dr. Olsen submitted another red dot/green dot map. We'll show you here.

Now you see, Your Honor, those Tahlequah samples, they're all red. There's no explanation in the text of the errata as to why this change has been made, they've just been changed. But then in the declaration that plaintiffs submitted from Dr. Olsen in connection with this motion, Dr. Olsen gives an explanation that based on new analysis by Dr. Fisher -- again, new analysis done long after expert reports were served, done long after Dr. Olsen and Dr. Fisher were deposed -- Dr. Fisher went out and decided that there was some poultry impact in this area as well.

And that new analysis contradicts Dr. Fisher's own prior poultry houses density work which was available to Dr. Olsen at the time he wrote his report, at the time he decided these should be green dots, not red dots. So it changed the story again, Your Honor.

THE COURT: Any indication from Fisher or Olsen as to why? People raising chickens in their backyard as a result of the recession or what?

And frankly, I've seen some discussion out there, particularly in the scientific community, concerned about avian flu, about the increase in chicken raising in the backyard. But in any event, any explanation?

MR. TODD: The only explanation, Your Honor, is the

new material we get in Dr. Fisher's declaration which is before the Court, where he suggests that there may be some poultry farming upstream in a subwatershed that could feed to this area, but nothing in Tahlequah itself.

THE COURT: Are these samples taken in the river at Tahlequah?

MR. TODD: They are water samples. I couldn't tell Your Honor exactly where they're taken from, but they're taken from -- they're different water samples from different areas in the middle of the Tahlequah urban area.

If we go back to the map, actually, you can look at the map, you can see that they're in the middle of the urban area there. Presumably small streams in the area. So there's certainly a question as to how far back the watershed, any water that's feeding here would go.

But the larger point, Your Honor, is that Dr. Olsen simply changed the analysis and conducted additional research long after the time to do so was passed to force his conclusion onto the available data.

Let me shift gears here, Your Honor, and talk about something we talked about yesterday. That's fate and transport. And I'll speed up here, try to push on through this.

Dr. Olsen has the same problem that Dr. Harwood has. Dr. Harwood, as you'll recall, was assuming that two bacteria

moved from the environment from chicken farm to Lake Tenkiller.

Dr. Olsen is assuming that 26 constituents moved together, including bacteria, incidentally. But the 26 things moved together through the environment.

Now, as Dr. Connelly explains in his report -- and we've submitted that as an exhibit -- that's simply an unrealistic assumption. I'm not sure you even need to be a scientist to understand this, Your Honor, bacteria die. Things that are dissolved in water move better with the water than things that are solid in the water. Heavier metals settle out of the water column faster than lighter metals.

So the assumption that these 26 things moved together through the environment in relatively fixed proportions and fixed ratios is not a realistic assumption.

Dr. Connelly's report explains -- gives a couple of examples of how that's simply not the case here.

In order to make that assumption, to assume that assumption, you have to study fate and transport of these different things and come up with some basis to believe that they move together.

But plaintiffs' experts have been honest in the fact that they have not done that analysis. We've cited all that deposition testimony to Your Honor.

We asked Dr. Olsen about it at his deposition this

last September, and he said that he didn't actually need to account for the fate and transport characteristics because the way his signature works is, if he finds these things at a certain location in the proper percentage, in the proper ratios, in the proper amounts, then he knows that's cattle -- that's poultry signature, despite the fact, Your Honor, that there were alternate sources for most of these things in the IRW. We talked about bacteria yesterday, fecal indicator bacteria, E. coli, enterococcus. These are part of Dr. Olsen's PCA, these are constituents that he looks at; but yet there are many sources for these things. You have no guarantee that the bacteria you find supporting the PCA analysis in the main stem of the Illinois River far downstream from any poultry house actually came from poultry as opposed to a cow or anything else.

Let me touch, Your Honor, on the hold time motion because this is where it's relevant. Your Honor deferred a ruling on that yesterday and said you'd like to take it up with respect to the individual experts.

The point of the hold time requirements is to analyze the sample and enumerate the data under conditions that are representative of how the water appears in the environment. Recognize you've got to pull the water out of the river and go to a lab to see how many bacteria there are. But the longer you defer doing that, the less representative the bacteria

count will be of what's actually in the water.

Dr. Olsen's PCA assumes, it depends on things being present in certain ratios. And if the water sample you're enumerating for bacteria is nonrepresentative, if it took too long to get to the lab in California, whether the bacteria grew or whether they died, it doesn't matter which way it went; it's not representative. And so the ratios Dr. Olsen is measuring for his PCA are not representative of what's going on in the water and the PCA is invalid, Your Honor. So that's why the hold time motion matters for Dr. Olsen.

Let me touch on one final thing, and that's these confirmatory analyses that Dr. Olsen ran. If you recall, back in the beginning, I put up the scatter plot, it talked about how Dr. Olsen draws the ovals. The PCA doesn't draw the ovals; Dr. Olsen does.

The way he does that is he takes certain points on the map and he says, I know what this sample is. I know that this sample is cattle or is poultry impacted, I know this sample is wastewater, and so I'm going to analyze that sample and I'm going to see what its PCA score is, and then any other sample that is similar, has a similar PCA score, must also be impacted by the same thing.

So he goes out into the IRW and he picks two subwatersheds. He looks at 23 points, 23 samples from those subwatersheds. And he says -- and these watersheds --

subwatersheds had low poultry house density, so he could say, well, this sample was taken near a poultry farm, so it must be poultry impacted.

But these subwatersheds also, Your Honor, had no urban area to speak of, no cattle operations to speak of. In short, Dr. Olsen took all the other possible impacts off the table as well. He then comes back to his analysis and he says across the IRW, despite the fact that there were urban areas and cattle and other things elsewhere that could be accounting for these results elsewhere, my spatial analysis shows that, you know, across the IRW, the score 1.3, or now 2 or 2.6 equals poultry impact.

So the analysis -- based on the subwatersheds he picked, the analysis is not really -- doesn't really bear out.

But let me demonstrate one more thing. And that's -- the assumption of his analysis -- the assumption of this analysis is very important. He assumes -- in order to do the spatial analysis, you have to assume that you have a sole source sample, i.e., the sample that you're using for your confirmatory analysis actually represents poultry litter, actually represents waste water, actually represents well water, whatever it is you're looking at in the real world so you could then come back to your PCA and say similarly scored samples must be the same thing.

But in light of the Fisher declaration, and in light

of Dr. Olsen's most recent explanations for these various things we've talked about, Tahlequah and wastewater, he doesn't have any sole source samples left.

He's told us the edge-of-field samples are all impacted by cattle. That was in his deposition, and I think we put in pictures of the photographs of the PI to demonstrate that, they're cattle impact there. Those samples were impacted by the ground they're sitting in. They receive runoff from other places.

He's acknowledged that the wastewater treatment samples now, in his view, are not purely wastewater treatment.

He's told us that the cattle samples are apparently poultry impacted. The urban -- the Tahlequah samples, they're impacted by poultry. At his deposition, he told us his residential well samples seem to be like wastewater, so they must be impacted by human waste.

In short, Your Honor, he has no source-specific samples.

I'm sure you'll hear from the State that Dr. Olsen's PCA methodology has a long pedigree, and they'll cite a bunch of articles, and they're set out in Dr. Olsen's declaration. Those articles talk about the spatial analysis, this need to confirm what your PCA is telling you. And they make clear that you have to do that with sole-source samples. Dr. Olsen didn't do that, Your Honor. Based on the data set he now tells us he

has. He's incapable of performing that analysis.

So, Your Honor, to sum up, Dr. Olsen's analysis is new, developed solely for this litigation, it hasn't been peer reviewed by anyone, and it's internally inconsistent.

For these reasons, Your Honor, we suggest it's unreliable and should be excluded pursuant to Daubert .

If the Court has any more questions, I'm happy to take them.

THE COURT: Now, in terms of the sampling procedures that we discussed yesterday, were all these samples sent to California?

MR. TODD: The water samples?

THE COURT: Yes.

MR. TODD: Initially, no; because they initially made use of a local lab that was called FoodProtech.

THE COURT: Because I thought that had to do with bacteria.

MR. TODD: That's what I'm talking about. With regard to the hold times, that is just bacteria, Your Honor.

THE COURT: Right. And this really isn't bacteria at all, is it?

MR. TODD: Right. This is a different issue. This is just whether samples -- the last thing I was talking about was just whether samples accurately reflect impact from a single source.

THE COURT: No, I understand that, but in terms of -- hold time doesn't really impact Olsen's expert report, does it?

MR. TODD: I'm sorry, Your Honor, I was unclear. It does, because three of his -- I'm sorry, four of the constituents in his PCA are bacteria. The things that he looks for in the environment, he looks for -- I may mistake what they are, but arsenic, copper, nickel, they also include enterococcus, E. coli, total coliform and maybe fecal coliform, but I'm pretty confident there's four of them in there. And his whole theory assumes --

THE COURT: Four of the 26?

MR. TODD: Four of the 26 are bacteria. And the way the PCA works is it derives a number which represents the relationship between each one of those between the samples.

And so for his analysis to work, for his methodology to work, when he goes to a sample in the environment, he's trying to find those 26 things in set ratios, in set proportions.

Now, if you take a water sample, its nickel content doesn't change between the river and the lab, but its bacteria content may well. So if the bacteria have grown or have died over time, and that growing or dying has brought it into conformance with what Dr. Olsen is looking for, he may find his PCA, but he did not measure what's in the water, Your Honor;

he measured what made it to the lab.

The point of the hold times is to make sure what the lab measures is what's representative of what's in the water. And unless you comply with the hold times, you're not doing that, Your Honor.

Any further questions?

THE COURT: I don't believe so. Thank you.

MR. TODD: Thank you very much, Your Honor.

THE COURT: Mr. Page.

MR. PAGE: Thank you, Your Honor. David Page for the State of Oklahoma. I have prepared remarks but I think what I'm going to do is deal with some of the arguments specifically that Mr. Todd provided and then if the Court will allow, allow me to go through my prepared remarks after that.

THE COURT: Yes, sir.

MR. PAGE: I'm going to skip the novelty. That is -- well, in my prepared remarks. But the second issue that Mr. Todd pointed out was the change in the loading scores. He noted that it changed from 1.3 in the original Rule 26 report to which, really in his deposition, I think the context of the questioning was, what exactly is it, and he said, well, I rounded it off to 1.3, but it's 1.30226. But that, Your Honor, I think would be the same from a computer-generated result. But then it changed to 2. And there's a couple of points that I need to respond to Mr. Todd's comments.

First of all, the Court is exactly correct; the reason that the number changed from 1.3 to 2 was the log transform error. So that failure -- and it was a mistake, it's an oversight, it's an, oops, we made a mistake -- to change the data that came out of Systat and log transform it may change the numbers from 1.3 to 2. So that was the exact issue there.

THE COURT: Why did it change the results to such an extent if it was merely a log transform change?

MR. PAGE: Your Honor, my understanding -- now what happens once you get those numbers, then you have to do a spatial analysis. And Dr. Olsen did a spatial analysis based on those numbers, individually, you have to go sample by sample and say, okay, first of all, what were the results for this sample, do the sample constituents in those results mimic the main constituents of poultry waste, the key constituents that transport through the environment. And I will get to that point also, Your Honor. And then where was the sample taken in conjunction to what we now know -- now know about this watershed. Was it taken in an area where there's known poultry house application in a poultry house dense environment or, for example, was it taken in an area like Tahlequah.

THE COURT: Do I understand correctly that he determines his poultry impact threshold after performing his spatial analysis?

MR. PAGE: Yes, that's correct, Your Honor.

THE COURT: Because he has to consider such things as did this sample come from a poultry-rich environment?

MR. PAGE: Yes, sir. It's not completely that simple, because when you run the Systat and before you do your -- then log transform the numbers, you still get those scatter plots and they show shapes.

So the first thing on the principal component analysis, do you see distinct groupings. So he does identify those distinct groupings and sees where they lay out on the data after it's been log transformed.

So the groupings is also important. You have a wastewater treatment plant grouping and a poultry house grouping that was shown on the plots. And then is there any grouping for cattle; and there is a grouping for cattle up in the upper right-hand corner of the plot.

So he does that analysis. Then he looks at the spatial analysis sample by sample, the ingredients of that sample, the constituents, multiple constituents and where it was located in the IRW to then determine, okay, where do you draw the line, where do you draw this 1.3 or 2 line.

Now, Your Honor, this is an environment. We're not talking a laboratory, where you collected a sample in a laboratory from a pure result. So when the defendants argue that the loadings are solely poultry house, that's not what Dr. Olsen's Rule 26 report is nor his testimony.

What he's saying is, this is an environment with a mixture of a lot of things going on. But is there certain samples that have been dominated by poultry waste. So when he drew the line at 1.3 or 2, based on his judgment and opinion and work in the scientific area as a geochemist and understanding what the circumstances are in the IRW, how these chemicals react and where the sample was taken, he says, I believe that after the log transform, a sample above 2 is dominated by poultry waste. That doesn't mean it couldn't have some wastewater treatment plant mixed into that river sample also. In fact, it would. But is the dominant of that, is the dominant constituents in that waste from poultry house.

So the key issue here is that the defendants' experts were then shown scatter plots before and after the logarithmic change.

What Dr. Olsen did do is he reran the PCA with the log change, performed the scatter plots. We put those in front of defendants' experts, Cowan, Johnson and Murphy -- and that's all in the record before the Court in our response -- and they all agreed that the clusters remained the same. They looked different because of the log transform in the data, but the clusters remained the same.

Now, this all goes to an errata issue, Your Honor, and I think it's fair that this Court not consider errata changes in the context of Daubert . But let me explain exactly

why not all 15 runs were not changed.

THE COURT: Except perhaps to the extent that it reflects unreliability in the methodology. I mean, I agree that in terms of the errata change, it and of itself can't be considered here, but I think Mr. Todd is suggesting that Mr. -- Dr. Olsen is forcing his conclusions to meet the data.

So to the extent that the history of the litigation shows a history of forcing conclusions to meet the data under his methodology, does not -- does that not reflect unreliability in the methodology itself?

MR. PAGE: No, Your Honor. I don't know where the forcing comes from. Dr. Olsen -- the scatter plots have the basic same relationships.

Now, once you do transform the loadings and you have a different number, you look at those numbers -- and, again, there is a judgment call as to whether or not some of those are dominated -- again, dominated by poultry waste. Some of them may change after you log transform.

But, Your Honor, the essential methodology was reliable. It was an oversight error that was corrected. So --

THE COURT: All right.

MR. PAGE: So --

THE COURT: If that's the case, though, I mean, he had identified four principal runs, correct, out of his -- out of the total number of runs that he had performed? Why did he

not convert the other two principal runs after log transforming his data? Doesn't that call into question itself the reliability of this methodology?

MR. PAGE: No. His opinion is based on the two runs he converted. They deal with groundwater --

THE COURT: But he said the other two were principal before. If they were principal before, they ought to be principal now, shouldn't they?

MR. PAGE: No. It's not the runs; it's the number of principal components that were identified in the runs. All of the principal components -- and there's 26 of them -- are identified in each run. It depends on how they're weighted in each run. You have principal 1 through 26.

THE COURT: Doesn't that suggest -- it raises a question: After log transforming the data on the other two runs that he had identified previously as principal, suddenly it doesn't match his theory.

MR. PAGE: No, Your Honor.

THE COURT: Well, then where are they? Why didn't he log transform them?

MR. PAGE: Because we talked about it, and it was late in the game, and the defendants, frankly, had complained vociferously every time we did an errata. And I said, how long is it going to take you to get them done? And he said, well, I need to do the two that support my opinion, which is

groundwater and surface water. And so that's what he did.

He can do all the rest of the runs now and provide it to the Court. Those runs are still valid to look at how the loadings -- excuse me, not the loadings, how the principal components come out.

It's just if you want to go then and look at a map and look at it sample by sample to see where it plots, that is the difficulty, and it takes a lot of time to do that.

So, Your Honor, his opinion as to effect on groundwater and surface water, he converted it and showed the changes. And that's what is the basis for his opinion in this case originally and still is.

The other runs were in the nature of sensitivity analysis to see if you get different groupings if you did the other runs. And you still produce scatter plots on each of those runs. And they have those scatter plots. The question is, is you produce a different scatter plot with the log transform data and then do that comparison. And that just simply wasn't done.

If you believe that's necessary and important, I suggest that you ask Dr. Olsen why he didn't do it directly. But my understanding was, frankly, is I told him we've got another mistake here, let's get it to them as soon as possible.

THE COURT: Well, he's been working on this since 2004 or '5?

MR. PAGE: Yes. And the error, the log transform was disclosed when the defendants submitted their expert reports in December 1st of 2008. And he reran these, redid the calculations and provided that to the defendants in February, 2009.

THE COURT: On the two runs.

MR. PAGE: On the two. He could have run them all. It makes no difference to his result. And if that's key, I'd suggest we take testimony from Dr. Olsen on this.

THE COURT: I was just wondering why, if it was a mere -- I thought it was a mere transformation -- or log transformation and then replotting with the log transform data. And you're stating to me -- and that makes sense -- that it requires some subjective analysis of each of the individual plot points to determine whether those are poultry-rich samples, in his judgment.

MR. PAGE: Take a lot more time, Your Honor. I was trying to move things along.

THE COURT: I understand.

MR. PAGE: Now -- if I may now address the Fite farm issue. In the deposition, Mr. George -- and I think properly -- said, hey, you've got some areas here. And there was more than just Mr. Fite's farm -- where you've got what appear to be poultry house signature, yet they're -- your spatial analysis indicates there's no poultry house influence

in that area.

And Dr. Olsen agreed that is true, that there was not, as far as he could tell from the record today, evidence of poultry application in that area. What happened here, the Fite farm sample was not to go out and find a cattle signature. That's important, Your Honor. The Fite farm sample was to go out and sample soils and any water that was there, but it wasn't intended originally to have water, to determine what a nonpoultry-impacted area would constitute.

The field notes, when they're out there, said they saw cattle grazing on the field, which is pretty typical of every field in the IRW. But the Fite samples were to find hopefully an area where there's no poultry house. When we got the samples back and we ran the analysis in the PCA, Dr. Olsen found that they barely -- they hit the 1.3 marker run on 1.3. So they barely showed poultry house dominance.

When Mr. George -- it wasn't -- I mean, the Fite samples are right there, the number is there. It's a clear apparent that that was -- it showed, in Dr. Olsen's opinion, some poultry house dominance.

THE COURT: That's under the original threshold. Under the new threshold with log transform data, do those samples fall within the new threshold?

MR. PAGE: Yes, right on the edge, but they fall within poultry house dominance. So that was a good question by

Mr. George; you know, why. And we believe it was fair to be able to respond to that. It was raised in his deposition. It was raised in the rebuttal reports. Can the expert be quiet and say, gee, I just can't explain that, that's an inconsistency? Or is there in explanation out there that we weren't aware of that explains this result?

So what we did is Dr. Fisher went out and evaluated the area, and he determined there were two springs; not just one, but two springs. One was -- would flow in periods of high rainfall. That's the one I think that you and Mr. Todd talked about. And the other one was free flowing all the time. And a sample from that spring showed poultry house contamination.

So the belief is, is that those springs with the poultry house contamination contributed to the soil samples creating this poultry house signature in the water that was ponding. The sample was from a water ponding on the field, apparently from where the springs were ponding on the field in that area.

The other -- other thing that was learned is -- you already mentioned, Your Honor, and that is that even though Mr. Fite's family has owned that property for a long time and they don't know of any poultry waste application, he does get cut fields from areas where he understands the farmers use poultry waste on their fields, and that was used.

But I think Dr. Fisher's opinion, which is in the

declaration, is that it's primarily the spring influence that's creating the contamination signature from those waters that are ponding on Dr. -- on Mr. Fite's property.

So, Your Honor, it's not like this -- there's not a cattle signature there. I think Dr. Olsen has cattle signatures. It's the same key samples that he identified in the preliminary injunction that plot up in the upper right-hand corner that he's identified as unique to cattle.

He also has the ability to -- he's taken cattle manure and had it analyzed. And he's taken poultry waste and had it analyzed. And he's taken wastewater treatment samples and had them analyzed. He has a list of constituents.

In addition to the spatial analysis, I think you'll remember those -- I call them bar charts where you saw which chemicals -- there was the red and the orange ones, which ones, which chemicals loaded highest on those charts.

Dr. Olsen also looks at which chemicals in these different source -- soil source samples are the highest influence in the basin. That is, for poultry waste, you have lots of phosphorus but, frankly, Your Honor, you have lots of copper, zinc, arsenic, and nickel, but primarily copper, zinc and arsenic in poultry waste also. This is confirmed -- lots in compared to what? Lots in compared to any other source in the IRW.

Cattle waste doesn't have the level of those metals.

Other researchers, peer-reviewed published papers who have evaluated putting poultry waste on a field, a test plot, and cattle waste, and then they use rainfall simulations, identified that poultry waste has high runoff, much higher than cattle, of phosphorus, but also high levels of dissolved copper, zinc and arsenic.

And the belief is, is that it's in a dissolved phase because of all the organic materials that are in the waste. But when they compare the runoff from cattle, you don't have those chemicals.

So the one comment that Dr. Fisher -- you noted in his declaration was substantial amounts, I think that should be read in the context of in relationship to other sources of potential copper in the IRW or zinc or arsenic. So we don't have a --

THE COURT: As I recall, there was testimony at the preliminary injunction hearing about those components being in the feed, right?

MR. PAGE: Yes, sir, they're added to -- that was part of Dr. Engel's preliminary injunction and Rule 26 report where he evaluates, okay, why do we have these increased levels of copper, zinc and arsenic in the environment; not levels enough to actually cause an injury yet, but they are present in the environment above background. And he identified that those constituents are added to feed as micronutrients for the

poultry also as biocides. They kill a lot of the bugs that are in the stomach that would prohibit good nutrient growth for the poultry, for the chicken or the turkey. So that's all been part of the analysis.

So to bring it back now to Dr. Olsen's analysis, is that those chemicals are important because then Dr. Olsen can look at what -- he has cattle, he can -- he has poultry in his wastewater treatment plant, and he can evaluate those key constituents in the signature.

The poultry signature shows key constituents of phosphorous, but also of copper, zinc and arsenic. They're the highest -- the biggest bars at the top. And so that's another part of this analysis.

It's kind of like -- but more sophisticated statistically -- when I would take a sample of an area that's never been impacted, we call a reference or a background sample, and see how that compares to an area where I know the waste or -- this generator has done it -- and if I see increased chemicals there, between there, then I can say, okay, that one has been impacted; now let me compare those two samples with what we know is in the waste.

That's essentially what Dr. Olsen is doing when he does his loadings analysis. He's looking at actual waste samples, which he has, actual representative samples in the environment that would be strongly influenced by poultry

waste. And those samples are the edge-of-field samples where we have known poultry waste application in recent rainfall. We have collections of those. And he looks at those, and those are his baseline analysis for the water to say, okay, what does poultry waste water look like.

And again, we see those high levels of phosphorus, zinc, copper and arsenic in those runoff samples. We see other researchers finding those high levels of those constituents in their research.

And Dr. Olsen went and -- this is in his Rule 26 report -- actually did leachate tests for cattle -- it's a sample analysis where you see what will leach while you add a lot of water to the sample. And he also found that cattle tended to have much less leachate of those four principal constituents than does poultry. So that explains, I think, Your Honor, the different sampling constituents.

Let me talk a little bit about the wastewater treatment plant discharge. Dr. --

THE COURT: Mr. Page, just a second.

MR. PAGE: I'm sorry.

THE COURT: Looks like the U.S. Attorney needs to talk to me. We'll take a short recess.

(Whereupon a recess was had.)

THE COURT: Mr. Page.

MR. PAGE: Thank you, Your Honor. I was going to

look at some of the other arguments that were made by the defendants on what they found inconsistent in the spatial analysis. The other one was the wastewater treatment plants, and there were four wastewater treatment plant discharge samples that they were concerned with. Three also showed some poultry waste impact. They were actual -- three from Rogers, Springdale, and Siloam Springs I believe was the third one, that actually showed some -- didn't say -- had some poultry waste impact to them as far as the score was concerned.

I think Mr. George accurately, as well as Dr. Fisher, pointed out is that each of those plants received poultry waste contributions. And that was also part of Dr. Engel's expert report.

Now why is that significant? This is a slaughter house, a processing facility for poultry. And in slaughter houses and processing facilities, there are waste and manures in those, part of that activity. So it makes sense that those constituents from waste in processing plants as well as the other things, these same basic constituents that are key such as phosphorus, nickel, zinc and arsenic would also be potentially there in the poultry waste because those are actually part of the feeds that make up the poultry that's being slaughtered.

With regard to the Lincoln wastewater treatment plant, that sample we could not get access to a actual

discharge, so the samplers went downstream approximately a mile and took a sample.

That sample is influenced by runoff. In fact, there are poultry houses in that subwatershed region, so we have to suspect the Lincoln wastewater treatment plant sample would also be -- have some poultry influence.

Now, they still score as being dominated by wastewater treatment plant, but there is the possibility in an environment such as this to have other influences as well, and that's why you'll have a dot that will score sometimes both poultry house dominant and wastewater treatment plant dominant where there will be a mixture of the waste at that location.

Tahlequah is similar to Ed Fite. Those samples came back borderline poultry waste dominant.

On further investigation, as scientists tend to like to do to explain why there's an anomaly in their analysis, it turns out that there was poultry waste land application upstream on fields that drain into those creeks. And the samples were taken from Tahlequah Creek, not the main stem of the Illinois River there, Your Honor.

So that analysis was done to evaluate those anomalies in Dr. Olsen's results to see if there's an explanation.

THE COURT: Why did he take them out in the first place and then put them back in?

MR. PAGE: Because he didn't have an explanation. He

didn't think it was fair to characterize them as red dots. He did disclose them as 1.3, but in the deposition, as would be appropriate in an examination of why does this have a 1.3 but not a red dot, is because Dr. Olsen said, I don't see any -- at this point in my analysis -- any basis for a poultry house to score like that, so I have to show it that way.

The fate and transport issue is an interesting one that Mr. Todd raised. Your Honor, there's 26 parameters or constituents or elements that are part of the PCA. The PCA does not contend that and does not show that they all traveled together, nor would that be normal.

The PCA selected -- the 26 constituents were selected as constituents where there was complete data.

I think you'll recall from the preliminary injunction hearing and also in Dr. Olsen's Rule 26 report is that there's some data screening analysis; you have to have sufficient number of detections, do you have enough across the watershed so that the data would qualify, the parameter would qualify.

You're not going to put, for example, radon in your analysis when you don't have any radon in your samples or some other -- PCBs.

So those constituents are part of the 26. The 26 are the ones -- the constituents that are regularly found in all the environments throughout the IRW.

So then what is the key for fate and transport? It's

the same key constituents. It's the same key constituents that I just mentioned to you. It's the ones that load the highest on the bar chart: Phosphorus, nickel, zinc, copper and arsenic.

Those charts are provided in Dr. Olsen's Rule 26 report. They were testified to in this court before. And it's those constituents that are found together and load highest that are indicative of poultry waste contamination because, as other researchers have found, and other analysis performed by Dr. Olsen, those constituents are added to the environment in significant amounts by poultry waste and they do travel together, according to the analysis and studies done by Dr. Olsen, Dr. Fisher and other researchers, including researchers at the University of Arkansas that are cited by them.

THE COURT: What of the argument that with regard to those components, Dr. Olsen substitutes the mean of all other values for that constituent and the dataset when that particular value is absent?

The argument is that, as I understand --

MR. PAGE: The nondetect, Your Honor?

THE COURT: -- he biases the dataset and alters the variability of the dataset when he substitutes the mean for an absent constituent in that sample.

MR. PAGE: Those are all the arguments that Dr. Cowan

raised, and go to -- and we're going to show how they're unreliable. Let me deal with that one in particular.

There's two substitution issues here, Your Honor. One is for nondetects and the other one is how does Systat deal with a -- the situation when there is not a constituent among the 26 in that particular sample.

And I think it's the second point that you're raising here, Your Honor; it's the pairwise deletion.

THE COURT: That's what Systat does.

MR. PAGE: Systat does that. Dr. Cowan erroneously claimed in his report that Dr. Olsen didn't use pairwise deletion but did actually modify, just kind of made up a number and put a mean substitution in there.

When we confronted Dr. Cowan with that in his deposition and pointed out that's not an option under Systat -- and our reply brief on our motion to exclude Dr. Cowan actually shows the options for Systat, that pairwise deletion was chosen. And what happens there is Systat continues to do the correlations for all the other chemicals, but does not do the correlation for that one. So it runs, for example, 24 correlations and does the analysis that way.

So that is what is done under Systat. It's a standard procedure. And, frankly, Dr. Cowan just got it wrong.

THE COURT: So pairwise deletion, then, is not substituting the mean.

MR. PAGE: No, sir. There's another mistake that Dr. Cowan made and now he's kind of backed away from, and the defendants, interestingly enough, in their arguments,seem to continue to make it, and it shows a lack of understanding of how analytical results and what they mean, how they convey information.

Dr. Olsen, when he had a nondetect that was -- that the sample was there, but it was nondetect for the sample, what he did is he substituted in those samples -- he put in the -- half of the difference between zero and the detection rate.

THE COURT: Right. And I put two big question marks here in that reference. I don't know what that means.

MR. PAGE: Your Honor, these chemicals, these 26 chemicals are well known to be in this environment. We have to let that sink in a little bit. The chemicals -- the 26 parameters are things you find in the natural environment out there.

THE COURT: Generally. But in a specific sample, you may have a nondetect.

MR. PAGE: Yes, sir.

And what does a nondetect, then, mean? It means the analytical procedure that was used to evaluate the quantity of that sample, that constituent in that sample; say copper. The copper was not detected at a level that would be high enough to show it as a detect. So here's the detection rate. Let's say

it's one. Here's a real zero, actual zero. The detection rate could be one, but anything below the detection rate, which could be half, three-quarters, one-quarter, it still shown as a nondetect.

THE COURT: This plugs in the -- that constituent at the midpoint, between the detection rate and zero?

MR. PAGE: Dr. Olsen did it in his data preparation. It's not automatic like Systat. This is something that's done by researchers, and this is shown in all the peer-reviewed literature that it's standard practice if you have a nondetect, to substitute one half a detection level. In fact, even Dr. Johnson's book that he was a coauthor with says, yes, that particular procedure which we pointed out.

So that was another error that Dr. Cowan raised as a -- frankly, Your Honor, a very capable statistician, but not understanding environmental statistics, raised that error and now he's kind of backed away on it.

The third point is averaging of results. The only results that were averaged were the ones where they were split samples.

THE COURT: Where you have actual samples, but multiple --

MR. PAGE: Analytical results. You have one sample, you took one cup of water out of the stream and you split it in two and you run it. And that's a standard methodology to do to

make sure your analytics are working properly along with controls and stuff.

THE COURT: Got you.

MR. PAGE: So if you didn't average those, then all of a sudden you'd be weighting more samples for phosphorus than you actually really have. More samples for that particular location.

So again, the literature, standard environmental techniques is, is when you evaluate this data statistically, you average split samples together and make it back into one sample. That was a point that Dr. Cowan made.

So those were the points -- and that saves a little time on the Dr. Cowan argument, Your Honor.

Mr. Todd mentioned hold times. And I'd just like to make a short point about that. Bacteria is part of Dr. Olsen's analysis. It was part of his PCA, the 26 factors. Absolutely no doubt about that.

So what's the issue with hold time? And I think this was discussed a little bit yesterday, and I want to bring the point home. I've had the opportunity to practice environmental law for almost 25 years. And not all requirements for agencies necessarily make scientific or environmental health risk issues a requirement.

This particular hold time that's being relied upon by the defendants is for point sources under the Clean Water Act.

And, again, the Clean Water Act regulates point source discharges. And it would particularly be relevant, frankly, to wastewater treatment plants, and it's six hours.

And why it's six hours? I believe, Your Honor, it's one of the bureaucratic requirements where the state or the environmental agency wants to know quickly -- get the results back quickly as to whether there's a violation.

And why do I believe that? The point is that the same EPA, when it looks at hold times for bacteria for drinking water, now that's the water that comes out of our tap, the hold time there is 30 hours.

Now, if there really was a concern, as long as you keep it cold, of the hold times and the six hours was critical to the changes, what's going on in that bacteria, EPA would not have issued for the Safe Drinking Water Act a 30-hour hold time for samples under the drinking water act.

THE COURT: As I recall yesterday, it was 30 hours on some constituent.

MR. PAGE: The bacteria constituents. It was the indicator constituents, as I recall, Your Honor. Indicator bacteria.

THE COURT: Even under Safe Water Drinking Act, it was six hours on some constituents, correct?

MR. PAGE: I don't recall that, Your Honor. I recall that the bacteria results I think for enterococci and E. coli

were 30 hours. That's my recollection, Your Honor, but I can't recall.

But even if it was for just two bacteria instead of all three, there's not any scientific understanding that I'm aware of that would have a different hold time for different bacteria.

THE COURT: And maybe I jumped to a conclusion. What does the acronym SWDA stand for?

MR. PAGE: SDWA, Safe Drinking Water Act. SDWA. That's the act that regulates public water supplies, make sure we get good, clean water.

If I may, Your Honor, now I'll turn a little bit to some of my prepared remarks, and I won't try to repeat what I've already said, but I think there's a couple of other issues that should be pointed out.

I think that we need to make sure we understand what the challenge is today, do a little scoping. The challenge here today is on Dr. Olsen's PCA. And he has multiple other sections of his report that deal with the source of phosphorus that are not being challenged here today. I think that makes clear in the title of their paper and other -- but I didn't hear that directly, and I think that's true, Your Honor; there's much more in Dr. Olsen's report that goes beyond the PCA.

THE COURT: Let me ask Mr. Todd: Is that correct?

MR. TODD: That's correct, Your Honor.

THE COURT: Thank you. Mr. Page.

MR. PAGE: Thank you, Your Honor. One of the ways that -- we talked with Dr. Engel yesterday -- that you judge the validity of reliability of a methodology is to see if it coincides with other lines of evidence and the facts. And this PCA analysis by Dr. Olsen is supported by the other lines of evidence.

The fact that there is poultry waste applied all over the watershed, many, many different locations on fields. In fact, the reason we finally went to Ed Fite was it was the only place in the watershed frankly, Your Honor, that we believed that poultry waste that we could identify after three years of investigation did not have poultry waste applied to it directly.

So the whole concept of why does Dr. Olsen see poultry waste dominant signature throughout the watershed is supported by the amount of waste and the way it's distributed throughout the watershed.

Second of all, the geology and hydrology of the IRW, which is in part of Dr. Fisher's report, and Dr. Olsen studied and relied upon, indicates that it's certainly probable, likely and typical that poultry waste, once it's land applied, moves through the surface and the subsurface waters and that sometimes those surface waters and subsurface waters become one

or the other and back and forth. But that, again, supports the widespread nature of his PCA.

We've already talked about chemical compositions of the waste, Your Honor, when I talked about the actual samples of cattle manure and poultry manure and then the other analysis from feed and the analysis from other researchers. The fact that his loadings, his highest loadings that create the signature are consistent with those dominant chemicals, supports the PCA.

The mass balance that Dr. Olsen did with the assistance of Ms. Smith shows, again, that the mass of phosphorus contribution in this watershed is poultry.

The overall -- you talk about fate and transport. These are all, I believe, fate and transport evidences. But Dr. Olsen, as part of his testimony and his report, talks about the gradients, the different -- he called them environmental compartments before, that if you look at the levels of these key constituents at the edge of field, then down gradient, you see his grading approach where phosphorus levels are very high on the edge of fields; as they move down to first streams, second streams, they reduce as they go down through.

So that gradient or overall pathway sampling approach shows that these key constituents are present in each of the pathways, and the levels of their concentrations are the appropriate gradient from the location where the waste is first

disposed of to when it gets into Lake Tenkiller. The lowest gradients are in Lake Tenkiller; the highest ratings are edge of field concentrations. That's consistent --

THE COURT: Just curious; it's not particularly pertinent. In the gradient, the result of deposition and usage by plants, in the case of phosphorus, if the gradient is -- just for my own education here -- is largely because of what factors?

MR. PAGE: You mean the different amounts of concentrations?

THE COURT: The gradient you were talking about. Are we merely talking about dilution.

MR. PAGE: Yes, and repeated applications. Poultry -- phosphorus that runs off and including also copper and zinc that runs off of a field, is influenced by the current application, but then if you have one application a year and that's all, the researchers have shown over the years, it's leaching of phosphorus, in the next year, even though there's no new application is higher than a field that's never been applied, but it's not as high as the field that got another application the next year.

So when phosphorus goes onto a field from poultry waste, about one-third of it, the agronomist will point out to you, about one-third of it is used that year in uptake, and two-thirds of it is either part of the runoff or stored in the

soils, in the soils themselves that will eventually leach out or be used by the plants in subsequent years.

I hope that answered your question, Your Honor.

THE COURT: Yes, sir. Go ahead.

MR. PAGE: There was also a small basin analysis that indicated the -- I think I mentioned it yesterday in Dr. Engel's analysis. Actually, Your Honor, I don't think I'm going to go through all the different slides of evidence because I've got two more pages, but they are set out in Dr. Engel's declaration there as to all those different lines of evidence.

And we just wanted to point out to the Court that the PCA doesn't stand out there all by itself as being unusual in the results, that there are all these lines of evidence that others and the State's experts have gathered that supports it.

THE COURT: Is it fair to characterize them as fate and transport evidence or just other lines of evidence?

MR. PAGE: I think most of them -- and I have to play them through my head -- are fate and transport. Because, Your Honor, we're talking about what influences the fate and how it's moved to the environment. Clearly the mass -- as we just talked about how phosphorous works -- affects fate and transport.

THE COURT: Copper?

MR. PAGE: Yes, sir. So all of these that we've gone

through help explain fate and transport. Now, I wouldn't think the poultry house density is necessarily a fate and transport analysis. What that just points out is there's a high correlation with phosphorus concentrations in streams where there's a high number of poultry house operations. That just tends to establish the fact that poultry operations affect phosphorus concentrations in streams.

It would be supportive, I guess, of the analysis that where is that waste going, it must be being put on the ground and it's running off and getting into the streams.

So in some respect, you can look at a fate and transport analysis; but fate and transport analysis, Your Honor, is unique to each type of contamination problem and each environmental situation you have. And so you are going to have a unique fate and transport analysis, depending on the constituents and the waste management practices and the location. It's going to be different because each of those three factors will have an influence on the fate and transport of those chemicals.

Let me jump over to this issue about being novel and not fundamental. Your Honor, I know we've talked a lot about this; and with all due respect, I will go to my grave, I know, believing that what Dr. Olsen did here is not novel.

In fact, if you accept the definition of defendants' novelty, then every time you run PCA in any situation to

evaluate environmental contamination, whether it's in Italy or Texas or the IRW or California, it's going to be unique. And you're looking at different constituents in those locations, so it's always going to be unique because it's focusing on what are the sources of contamination in that location and with those issues or contaminants of concern. And that's how they've defined "novel."

And I don't believe that would be appropriate for this Court or Daubert or any scientist to believe that all of a sudden makes it novel because this is the first time anyone has looked at poultry waste moving through the environment and PCA in the IRW. I think that's just not fair and it doesn't make any sense.

The fact is, Your Honor, is that poultry waste -- well, let me ask this -- let me pass this. Agricultural waste in particular and nonpoint source waste in less particularity have been used as PCA analysis multiple times.

In fact, Dr. Olsen in his Rule 26(a) report lists 25 articles he was able to find. And ten of those dealt with agricultural waste.

Now, if I do a PCA analysis here and I find that poultry waste is a key constituent, and then I go to Cimarron County because we're having a problem with some other chemicals concerned, do PCA, under the defendants' analysis, this would have to be, then, another unique application.

So no matter how often or wherever you do the PCA, it's always going to be unique unless someone happened to do a similar investigation on that same watershed prior to you.

THE COURT: To a certain extent, this is rhetorical. It's already a law of the case here where the Tenth Circuit has said that when experts apply methodologies in novel ways, they may arrive at conclusions that result in, "too great an analytical gap between the data and the opinion proffered" to be determined reliable.

So -- and, in fact, they didn't even use the term "novel" with regard to Dr. Olsen. They did with regard to Harwood, but focused on the discretionary decisions in his methodology, etcetera.

So I agree with you; the methodology itself is novel. It seems to me that with respect to Olsen, the question is, has he arrived at conclusions that result in too great an analytical gap between the data and the opinion proffered.

MR. PAGE: So you believe, Your Honor, this isn't a novel application of this methodology.

THE COURT: I'm sorry?

MR. PAGE: Am I hearing the Court to say that you don't believe Dr. Olsen's use of PCA is not a novel application of a --

THE COURT: I don't know. I think that's one of the things to be decided here. It's not a question of whether the

methodology is novel; it's whether the methodology has been applied in a novel way.

MR. PAGE: Well, Your Honor, I think, first of all, I just want to say that those peer-reviewed articles we provided show agricultural applications, nonpoint sources applications of PCA, and the application methods, how they extracted data, how they did spatial analysis, is consistent with how Dr. Olsen did his PCA here.

So I think, first of all, I'll say the peer-reviewed literature supports the application.

Second of all, Your Honor, neither Dr. Johnson or Dr. Murphy offer an opinion that use of PCA in the Illinois River Watershed to determine whether or not poultry contamination is a dominant contaminant is novel or unique. They disagree with the results. And actually, we take issue in our Daubert motions as to how they've reached their results. But they both used PCA in this watershed.

Dr. Murphy used Olsen's data and did a multiphase, or solid and a liquid, multimedia PCA with the same data and he says, see, that shows all the phosphorus is natural. That's his opinion.

And Dr. Johnson did a PCA analysis and came to the conclusion that Dr. Olsen's PCA result is not really poultry, it's really muddy waters, a high TDS. And we'll talk about that in our challenge.

But the point here, Your Honor, is both of these experts by the defendants used PCA in this watershed. They have a different interpretation. But they don't say, gee whiz, we just can't do it. They did a PCA analysis and came up with a different interpretation of the analysis.

THE COURT: Okay. First step, though, you'll agree no one else has applied the PCA methodology and has arrived, by using PCA methodology, at a conclusion that one has identified a poultry signature.

MR. PAGE: Your Honor, I don't know. I don't know if it's been done or not. It certainly can be done, by the literature, and has been done for agricultural waste, other types of agricultural waste.

So I don't see what would be so unique, and I don't think the defendants have identified how poultry waste would distinguish itself from any other kind of agricultural waste that's been evaluated PCA.

THE COURT: I think, in part, they're saying that PCA is more suited -- and they quote some authority -- more suited for smaller fields and is not appropriate for a million-acre watershed. Your response?

MR. PAGE: Well, there are articles cited by Dr. Olsen that cover about the lower half of Italy, I think, is one of the river systems there. So I'm not aware of any limitation on PCA based on the size of a watershed.

PCA is -- if you have data, sufficient data, and if there is a dominant contaminant source, then it should show up as scatter plots results. And Drs. Murphy and Connelly and Johnson all agree that PCA is regularly applied in environmental situations they've done themselves.

And they actually tested Dr. Olsen's and they said, well, we don't agree with the interpretation of his results. It's a question of interpretation, though, not whether or not it can be used in this context.

Your Honor, those papers are all set out in Table 611-1 of docket 2198, and his report -- Dr. Olsen's original report 6-32. And also in his declaration, he summarized those for you as Exhibit C in response.

Dr. -- the reliability of its application, Your Honor, was also confirmed by how the defendants' experts made mistakes. When Dr. Cowan evaluated the PCA, he said that the application was wrong because of nondetects. Well, we've talked about that.

He said the application was wrong because of averaging samples. We've talked about that.

He said the application was wrong because of log values. Well, that's been corrected. The log transformation has been corrected.

And he complained about the meanwise substitution. And that, he was just wrong. The Systat does allow that

substitution, but doesn't substitute the means. So that, Your Honor, I believe, shows that the application was appropriate.

Now, what about the use of spatial analysis? We've talked about that somewhat on particular examples. But Dr. Olsen used the spatial analysis, he used contamination gradients and he looked at the chemical compositions to identify the sources.

This method of determining what the source is has been used by others in the literature, the source identification methodology by spatial analysis and chemical analysis in the literature, and it's set forth in Exhibit A to our response of the Olsen Daubert motion at paragraphs 10 and 21.

Dr. Johnson's concerns about spatial analysis that were raised that were -- some weren't talked about here, and others -- where he claims that, gee whiz, there's not any poultry house in the area where Dr. Olsen found poultry houses are just mistaken. He used the wrong poultry house density. He didn't know how to draw subwatersheds, so he wasn't capturing areas that were poultry house influenced. So that was just a flaw, an error on his part.

So all of these analyses show that poultry -- the use of the PCA in this context was appropriate.

One of the claims that defendants make was also about

the multiple tests. And I didn't hear this in argument today, but it's in their brief that Dr. Olsen kept on running these different tests just so he'd get the right result. Well, those different tests were sensitivity analyses to see and to confirm whether or not the statistical model was working properly.

That's all set out also in Dr. Olsen's declaration attached to our response.

So, Your Honor, in conclusion -- and I'm going to talk specifically about the application more in the Murphy and Johnson when we do that. I'd like to kind of continue my Olsen response by critiquing Johnson and Murphy then.

In conclusion, there have been numerous studies of the IRW that support Dr. Olsen's results. And I think if there weren't a lot of studies out there that suggest that poultry waste was a substantial contributor of phosphorus in the basin and affected the basin, then there would be some grave concern about Dr. Olsen's PCA analysis. But his PCA analysis is consistent with all these other lines of evidence.

Dr. Murphy and Johnson, they, as I'll point out, also have worked PCA in this watershed. They just have a different interpretation of the results. Dr. Johnson thinks it's muddy water as PCA signature, and Dr. Murphy says, gee, there's no contamination at all, it's just natural runoff.

Actually, important, Your Honor, to this consideration of the validity of their two opinions, their

opinions contradict with each other. The defendants' experts actually contradict each other, and I'll point that out in a moment.

Finally, Your Honor -- and I know you struck the declaration, but I will make an offer of proof.

THE COURT: Which one specifically? Because some are and some are not.

MR. PAGE: Dr. Loftis' declaration in response to the -- this particular Daubert was stricken, and it was attached as our response. I think it was Exhibit --

THE COURT: Exhibit D.

MR. PAGE: -- D. Thank you, Your Honor. Actually -- he actually did run independently Dr. Olsen's PCA using his data on a separate program and got similar results. And, Your Honor, that opinion is not being offered for trial but just for the purpose of Daubert .

So in conclusion, Your Honor, I believe that Dr. Olsen's analysis does -- PCA analysis does meet all the Daubert tests.

And I implore and ask the Judge to consider this evidence as a more full record today than what we had back in March of 2008.

THE COURT: There's no question we've got more to analyze. We can't rely on the earlier preliminary determination for those limited purposes.

In any event, you come to a rest at an opportune time, which gives us all an opportunity to eat lunch. We'll be in recess until 1:15.

(Whereupon a recess was had.)

HE COURT: Mr. Page.

MR. PAGE: Thank you, Your Honor. Before we proceed with Cowan, Murphy and Johnson, I just want to correct some statements I made just before lunch concerning the rerunning of the PCA after the log transformation error was found.

I talked to Dr. Olsen during the lunch hour, and I made some mistakes on what I told the Court and I want to correct it.

There were 30 total runs originally done in his report; 22 water and 8 solids. The two most critical ones were SW3 and SW17, which dealt with surface water and groundwater.

There were two other runs that he identified in his report, so it would be a total of four. There were two solids runs that he also thought were important because they helped him distinguish between cattle and poultry waste, but he had other lines of evidence that also showed the distinctions.

When we got Dr. Cowan's report and the log transformation error was discovered, he reran all of them, all 30 of them, but it was my decision to only include two of them because it would have been 30 additional plots plus three plots as opposed to two in February.

It was my judgment that those were the two that related directly to his testimony as to contamination in the IRW in the waters, and that's why only two were submitted.

THE COURT: So the others were run?

MR. PAGE: Yes, they were.

THE COURT: And plotted?

MR. PAGE: They were -- most of those other runs were sensitivity runs. For example --

THE COURT: But I'm specifically interested in SD1, SD6 and SW22, which were previously delineated by Dr. Olsen as important runs. It was your decision not to submit them; is that correct?

MR. PAGE: That's correct.

THE COURT: Okay.

MR. PAGE: And Dr. Olsen reviewed those and determined that they were not important, they did not have any difference in change; that is, they were not important in the sense they did not change the results. That is, the scree plots still showed the clusters as the previous unlogged transformed clusters were shown.

THE COURT: But what we have left -- or what we have, rather, is SW3 and SW17; is that correct?

MR. PAGE: Yes.

THE COURT: All right.

MR. PAGE: It was my decision, Your Honor, based on

the fact it was February 10th and it was -- we had been, frankly, criticized quite a bit by the defense counsel for submitting errata, and I asked him which were the ones important to his testimony, and he said these two. And so we submitted those two.

THE COURT: I think I had already entered my order saying errata is one thing; new stuff is different, right, in January?

MR. PAGE: I think Judge Joyner entered an order to that effect, I recall, Your Honor, on errata.

THE COURT: I wrote two orders on the same day. In any event, let's move on.

MR. PAGE: With regard to Dr. Cowan, Your Honor, we've already discussed briefly his experience, and I would say that the errors that he committed in data extraction that we've already identified indicate that statistics are not simply statistics; that there are universities that teach specifically statistical analysis.

For example, Colorado State University, they talk about how do you handle nondetects, what do you do with split samples, and how you extract data for environmental analysis.

THE COURT: Frankly, your explanation of those three subsets is satisfactory to me and, frankly, they pass -- they sound reasonable.

MR. PAGE: So there are just two other things that he

did, Your Honor --

THE COURT: In fact, Mr. Todd dropped it. He didn't even argue it to me this morning, right, as to split samples and dropped means and the -- whatever you call the --

MR. PAGE: Pairwise deletion.

THE COURT: -- averaging between zero and the detection? What is the shorthand for that?

MR. PAGE: That's the one-half detection limit.

THE COURT: He didn't even raise that this morning, right?

MR. PAGE: He did not. So I won't raise -- in fact, the only one he did raise was the mean substitution, and we've already talked about that.

There were a couple of other errors in Dr. Cowan's analysis with regard to combining the datasets. He had a criticism of Dr. Olsen that he combined the USGS data with the data that TDM collected, and he thought that the analytical results for phosphorus were different. He didn't understand that even though there were two different analytical methods proposed, one by EPA and one by USGS, for example, they were the exact same tests; they were just different nomenclatures.

So he was complaining that you couldn't add the datasets together and do one PCA because he thought the analytical results were different for phosphorus and, in fact, they were not.

And so that concludes my presentation on Dr. Cowan, Your Honor. I think that these criticisms, many of which were part of the defendants' initial motion for Dr. Olsen and, in fact, are part of the issue about whether it's properly been applied in this watershed, indicate that those criticisms are unfounded.

Now, with regard to Dr. Johnson, Your Honor, and Dr. Murphy, they both, as I mentioned to you earlier, both ran a PCA, but they have different interpretations. I think they do have one thing in common that I think is rather astounding, and that is that neither Dr. Johnson or Dr. Murphy said they found a significant poultry waste contamination in the IRW, which is, frankly, contrary not just to what Dr. Olsen says but to what USDA has said, United States Geological Service, the State of Oklahoma DEQ and ADQ have both attributed poultry waste as being a significant contributor of phosphorus contamination in the watershed. And neither of them, through their PCA analysis, could identify poultry waste as being a significant contributor. They both -- neither one actually gave an opinion as to the sources of phosphorus in the watershed.

So with regard now first to Dr. Johnson, Your Honor, he did a -- first of all, where does he disagree? I think it's important that both Dr. Johnson and Dr. Murphy disagree. Dr. Murphy -- excuse me, Dr. Johnson criticizes the use of a

multimedia PCA. And let me define that. That's where you combine both your solid samples and your water samples together and run that into one PCA.

Dr. Olsen did not do that because he understands and understood, and I guess Dr. Johnson does also, that if you put those two together, some of those chemicals that are part of the PCA run would change once they were diluted with water.

THE COURT: Perhaps I'm confused. I thought it was Murphy that had the multimedia approach.

MR. PAGE: He did.

THE COURT: But you're saying Johnson did as well?

MR. PAGE: No. Johnson criticizes that approach. In his report, which is docket 2169, Exhibit 1, Johnson report at page 70, there is a statement in there by Dr. Johnson recognizing that you cannot do a multimedia; that is, you cannot combine your solids and your water samples into one PCA run.

And so I'm just pointing out in my Dr. Johnson presentation that he and Dr. Murphy disagree on that point. And Dr. Johnson, frankly, agrees with Dr. Olsen on that point, that multimedia is inappropriate, and the reason for that is, is because of the change of phosphorus and other chemicals once they are added to water in the environment.

Also, Dr. Murphy and Dr. Johnson contradict each other in the sense that Dr. Johnson recognizes that there are

high phosphorus levels in the IRW, but he doesn't know what the source is. He testifies that he never did an analysis of sources that was in his job, so he doesn't know why there's high levels of phosphorus in the IRW.

Dr. Murphy claims that the high levels of phosphorus are probably just natural runoff from fields and they're not attributable to phosphorus. So that's a contradiction.

Also with regard to Dr. Johnson, Your Honor, Dr. Johnson did the PCA analysis, and he claims that rather than we have two signatures that are poultry and wastewater treatment waste, really they're just simply muddy waters and salty waters.

And during the deposition -- and that's found, Your Honor, in his -- both his opinion and his deposition, which is Exhibit B to our motion at pages 144, 148 to 151, 444 to 445, and 454 to 455 of Johnson's deposition.

When I examined him about this, I asked him, well, then, what is your definition of a muddy water? How much total dissolved solids is sufficient if you're characterizing this analysis of the PCA that Olsen has done and you've done with his data as muddy water, and he said he didn't have an opinion about that. He didn't evaluate whether -- how much TDS would be in muddy water or how much TDS or how much actual particulates were actually in samples that Dr. Olsen identified as poultry waste so he could say, look, all of these poultry

waste samples just have a lot of particulates in it.

This goes to the point, Your Honor, that he never did any specific evaluation of the IRW data, so he didn't understand that his analysis was not confirmed with the actual data in the IRW.

And probably the point, the key point on this, has to do with then his opinion that the phosphorus in these muddy waters is in all particulate form because phosphorus from poultry waste is in particulate form.

And we confronted him during this deposition with the samples and analysis from USGS and the State of Oklahoma's sampling and other agencies' sampling, and what it turns out, Your Honor, is that the dominant portion of phosphorus in the IRW rivers and streams is in dissolved phase, not particulate phase.

So that fact in the IRW about dissolved versus particulate and what is the dominant type of phosphorous contradicts his muddy water theses; but on the other hand, the fact that it's dissolved base supports Dr. Olsen's analysis.

Finally, Your Honor, Dr. Johnson did submit an affidavit, another declaration in response to the -- to our Daubert motion, and it's attached as part of the defendants' response. We did not move to strike it.

We thought it was appropriate that Dr. Johnson give a shot at defending himself, and so it's in the record. And that

is -- it's in the record at 2169, Exhibit 7, submitted by the defendants. And a new declaration on June 5, 2009.

In that declaration, he continues to misapprehend basic concepts of phosphorus and these chemicals in the IRW so that his opinions as to muddy and salty water interpretation are suspect.

And he states this, and this is in the declaration of June 5: "I assert that the variability" -- I'm quoting, Your Honor. "I assert that the variability of total phosphorus in Olsen's PCA, regardless of source, is primarily a function of partitioning between particulate and dissolved phase."

Now, he's suggesting that total phosphorus change when you adjust the ratios of particulate to dissolved phosphorus in that statement.

Well, Your Honor, that's nonsensable because total phosphorus is the sum of particulate and dissolved phosphorus. So if the ratio between those two changes, it does not increase or decrease the total phosphorus. Total phosphorus remains the same.

This statement from his declaration at pages -- page 7 of Exhibit 2 to 2169 shows that he still fails to understand these basic geophysical concepts.

Finally, Your Honor, Dr. Johnson does not offer any opinion as to how the sources of phosphorus that he identifies but he claims is particulate, but it's not, came about.

And we pointed that out, that he doesn't have an understanding of what the potential sources are, how much they are, any kind of a mass balance background. How could he then, you know, basically understand, even without even looking at the data of the IRW concerning particulate versus dissolved, how could he make this decision.

The defendants, in their reply brief, tried to buttress his experience by claiming that he really did understand sources, contrary to what he said in his deposition, and that understanding came from a drive around the IRW looking out the windshield, and that he looked at other experts' opinions in this case concerning sources. But, of course, none of those expert opinions are cited in his Rule 26(a) report as being relied upon.

So, Your Honor, it's our belief that Dr. Johnson, although he does perform a PCA, it's faulty, and his criticisms, much of which are relied upon by the defendants in their attack on Dr. Olsen, should be disregarded.

Now moving quickly to Dr. Murphy, Your Honor. Again, Dr. Murphy did not, to the surprise, I think, of all investigators in this watershed, that he did not identify a poultry waste signature or any poultry waste contamination as being a problem.

His multimedia analysis, his conclusion is, is that the phosphorus that you find is natural background. And when

he was examined concerning, well, how does he clarify or understand that as natural background phosphorus, did he actually look at reference samples and do a comparison, he did not.

Now, the interesting thing about Dr. Murphy in his multimedia analysis is that he did it and he stands by it; yet he admitted in his deposition that actually chemicals do change from media to media, and if that happens, like chemicals change with reaction and dilution, such as what happens with phosphorus -- phosphates, that would be detrimental to a multimedia analysis. He concedes that in his deposition. It's Exhibit B to docket 2074 at pages 50 and 410.

And to Dr. Murphy's credit, he admitted he'd never done a multimedia PCA ever before in the past personally. He's done PCAs, but he never did a multimedia.

He was able to identify through work with one of his colleagues at Exponent one published article where they did a multimedia PCA. In that article, Your Honor, they were looking at PCBs. PCBs -- even though phosphorus is conserved in the environment, PCBs are very conservative. Their chemicals do not change when you add water to them. They're so strongly bound together, the chlorinated and carbon molecules are so strongly bound together that water and air will not create a reaction. And that was the only support he had for multimedia PCBs -- I mean PCA. I think that's a reasonable use of a

multimedia PCA if you had a chemical like pHs or PCBs but not certainly with phosphorus and the constituents we have in this case.

If I may conclude with Dr. Murphy. Dr. Murphy also offers an opinion that doesn't relate to PCA, except he uses PCA to determine that the Cargill -- several Cargill farms that are near points that were sampled by Dr. Olsen actually do not have poultry house signature.

And so he says he takes his PCA and he says, you know, I looked at the sample now near where the plaintiffs took a sample, and then there's a poultry farm that's owned by Cargill in that area, and he's saying, look, that had a low chicken house -- poultry house dominant signature from Dr. Olsen; therefore, Cargill's operations -- supposedly, I guess, different from other poultry operations -- are not contributing to the contamination in the IRW.

Now I asked him whether or not he'd done any research and discovered anything about turkey waste that would mean its properties would travel differently in the environment than poultry, and he said they looked into that and they could not find anything different.

So then, of course, I asked him in his deposition, well, then how do you conclude that the Cargill operations are not affecting this particular sampling point? He said, well, because the house is near there. And I said, well, do you have

any evidence that Cargill waste or even poultry waste has been applied upstream, and he said he did not. He did not do that evaluation, he had no evidence.

And he conceded that obviously something is either upstream or not, and that an upstream application would be important to determine whether or not there was an impact by that waste application downstream.

So that, in addition, would, I think, suspect any of his opinions at trial in this case concerning the effect of Cargill's operations on contamination in the IRW.

With that, Your Honor, I'm here to answer any questions you have. That concludes my presentation.

THE COURT: Thank you very much.

MR. TODD: Your Honor, I have very little to say.

First, as to the Cowan and the Johnson motions, defendants are pretty much happy to rest on the pleadings. We think the issues have been well joined, and I don't want to rehash what's there.

The only thing I'd say as to Cowan is, you're right, I didn't make those arguments in my opening statements for two reasons. One, I didn't want to take 45 minutes to an hour of the Court's time to talk about the intricacies of nondetects.

I also wanted to demonstrate to Your Honor that the Olsen motion could be resolved without getting into the Cowan motion and the Johnson motion. So I didn't talk about Cowan at

all. And the Johnson Daubert motion only goes to his alternative interpretation. It doesn't go to the rest of his analysis, so -- and as we represented, if Dr. Olsen is out, then we have no intention of calling Dr. Cowan or Dr. Johnson.

But to Olsen, Your Honor --

THE COURT: Before you do, let's talk briefly about Johnson.

MR. TODD: Sure. Your Honor, I'm going to have to defer that to Mr. George, then, because he's prepared to argue the Johnson motion.

THE COURT: Mr. George, are the defendants saying that Johnson's opinion is that IRW water quality problems are the result of natural processes?

MR. GEORGE: No, Your Honor.

THE COURT: I didn't read it that way either. I just wanted to see what the response was.

MR. GEORGE: That's absolutely correct. And as we pointed out in our response, Your Honor, we view that as a bit of a straw man argument or at least a misunderstanding as to perhaps his opinion.

Dr. Johnson's alternative interpretation is nothing particularly unexpected. It's been fairly well recognized in PCA projects and work done by others. And Dr. Johnson has an extensive history in doing PCA for environmental forensic work in other settings that sometimes what you see is a trend on a

scores plot like we've been looking at today is the function of a source impacting the chemistry, but sometimes it is simply a function of the way in which chemicals change in group in the environment after they're exposed to water, the geochemical processes.

So Dr. Johnson investigated the actual dataset that was used by Dr. Olsen in this case and looked at the samples that tended to plot high on PC1 or high on PC2 and discovered that there were some very natural -- in terms of the way in which chemicals operate in the environment, natural processes, geochemical processes that more aptly explain the variability in the data as opposed to source, which was the conclusion drawn by Dr. Olsen.

So that is the sum total of his alternative interpretation of the data is simply recognizing on a subject he's been published on before that geochemical processes can, in fact, derive the variability that one sees in PCA. And there's some history, and he points it out in his report, for folks mistakenly interpreting that variability in PCA as a source when, in reality, it's simply geochemical processes, so...

That's his opinion, Your Honor. It's not an opinion that the Illinois River watershed or the waters as they exist today are impacted only by natural sources.

THE COURT: Geochemical partitioning phosphorous from

any source?

MR. GEORGE: Correct, Your Honor. In fact, Your Honor, I believe we heard Mr. Page today -- in fact, during this last argument -- talk about adsorption, desorption of phosphorus. I don't believe there's any dispute in this case that phosphorus sometimes is found in particulate form and sometimes is found in soluble form and, you know, there's some other chemicals or constituents that are important to Dr. Olsen's PCA that tend to signal the presence of sediment or TSS, and those would be things like iron and aluminum.

And what Dr. Johnson's analysis found is that when you had a high PC1 score, you tended to have total phosphorus with very little dissolved phosphorus, which meant it was particulate-bound phosphorus; and you tended to also have the things associated with sediments, such as iron and aluminum.

And so if you look toward the top of that PC1 graph and you actually dig into the samples, that's what you see there are samples that are associated with sediments as if you scooped up some muddy water; whereas if you look along the bottom trend, which is the PC1 trend, you tend to find things that are more readily dissolved in water. As you go along, those things increase, which suggests that you've got water that does not have a lot of turbidity in it; you've got dissolved constituents, such as sodium and potassium and chlorides.

And his analysis is based upon a review of the data and simply providing the Court with an alternative view of what may be driving the placement of a particular sample.

Dr. Olsen's view is that a sample places in a place on his chart by virtue of the source that impacts it. And Dr. Johnson's observation is that regardless of the sources that contributed those things to the environment, the placement on the chart is a function of geochemical processes.

So that is his opinion, and I do think it's been misunderstood perhaps by the plaintiffs because I don't believe it's controversial in the least.

The other thing I wanted to comment on -- well, Your Honor, let me stop there and not waste the Court's time. If you have additional questions, I would certainly welcome the opportunity to answer them.

THE COURT: Specifically how do you respond to the argument that Johnson misapprehends concepts of dissolved phosphorus?

MR. GEORGE: I don't think that any of the opinions that he's offering require any advanced chemical understanding of phosphorus. He is simply reviewing the data, and the data reports both total and dissolved. And so Dr. Johnson is simply working within the data.

And as was set forth in the declaration that was mentioned by Dr. Page, Dr. Johnson does have some experience

working with datasets that include phosphorus.

So, Your Honor, I believe that there's a bit of a false premise in the State's motion. In fact, if you look at the beginning of their motion on page 6, they set up their entire argument by saying that Dr. Johnson's opinion rests on the premise -- his process-based opinion rests on the premise -- false premise, they say -- that most of the phosphorus in the Illinois River is particulate bound.

And that's simply not the platform for his opinion. He's not quantifying phosphorus in one form or another in the watershed. He's simply taking the 500 samples that have been used by Dr. Olsen and looking at where those samples plot if they have high portions of dissolved phosphorus as opposed to where they plot if they have low dissolve, but high total.

THE COURT: Do I understand correctly that the State's Daubert motion on Johnson goes only to his sixth opinion, which is that Dr. Olsen failed to recognize the influence of total concentration in geochemical partitioning?

MR. PAGE: Your Honor, it goes to his interpretation of Dr. Olsen's application of all the PCA, including this -- where he claims that what Dr. Olsen says as what Dr. -- as what Mr. George points out, that what Dr. Olsen sees as poultry, he sees it as muddy water.

Your Honor, if I misspoke before, I meant to say that Dr. Murphy is the one that says its natural process is

phosphorus, but that it's the geochemical processes, as we pointed out in our brief -- and what I meant to say in case I misspoke is what Dr. Johnson states as what's going on rather than poultry waste contamination. And our point --

THE COURT: Does your Daubert motion go to all of Dr. Johnson's opinions?

MR. PAGE: Yes, because his opinions are focused on PCA and interpretation of PCA.

THE COURT: All right.

MR. GEORGE: Your Honor, with all due respect, we read their motion, and obviously in our response set forth how we interpreted it. And the only criticism in the motion related to this alternative interpretation, and we very clearly stated in our response that was our understanding of the only opinion being challenged, then when we see the plaintiffs' reply, that there's no disagreement with that, and regardless of the position taken here today, there's certainly been no scientific basis that has been put forward by the State to challenge any opinion other than opinion No. 6, although obviously the defendants believe opinion No. 6 is well-founded as well.

That's a long way of saying -- I apologize for the length -- that what I just heard from Mr. Page is inconsistent with everything I've read coming into today.

THE COURT: Thank you very much.

MR. GEORGE: Thank you.

THE COURT: Mr. Todd, will you be addressing Olsen or Murphy or both?

MR. TODD: Cowan, Your Honor. And Ms. Kleibacker Lee will take Murphy for Cargill.

THE COURT: Great. I just need a chart.

MR. TODD: A flow chart. I know. Sorry. And if Your Honor has any questions as to Cowan, obviously I'm happy to answer them.

THE COURT: Other than the three topics that I discussed here with regard to the use of the mean and the substitution when there was no -- no indication they substitute a number between zero and the detectable amount and then the average of the split samples -- first of all, how do you respond to that? And then is there anything else there that Cowan criticizes of Olsen's report?

MR. TODD: Dr. Cowan criticizes the manner in which Dr. Olsen assembled and manipulated his dataset. The State's first argument about Cowan is that he can't testify in environmental cases. And Your Honor dealt with that somewhat yesterday with Dr. Harwood.

As I tried to make clear in my presentation, Dr. Olsen's subjective analysis, which requires some knowledge of chemistry and environmental sciences, that doesn't start until Dr. Olsen starts drawing the circles on the graph.

Everything Dr. Cowan says comes before that. It's all pure statistics.

With regard to the nondetects and the averaging and the missing data, the briefs, unfortunately, argue past each other somewhat. The plaintiffs take Dr. Cowan to task for what they perceive as him offering opinions on the proper way to handle nondetects or missing data in an environmental dataset.

Dr. Cowan, Your Honor, offers no opinion whatsoever regarding the proper manner to massage -- I was given a lot of grief for the way I said "massage" earlier, Your Honor -- was to treat an environmental dataset.

All he says is that if you understand how a PCA works, you should understand that if you have to fill in for missing values, if you -- whether it's by non -- sticking in half of the detection limit or replacing a missing value with some number, no matter where you get it from, whether it's from plugging in zero or pairwise deletion or what have you, if you do that, you necessarily change the variability in the dataset. And PCA is designed to measure variability in the dataset.

So Dr. Cowan's only point, and as a matter of math and a matter of statistics, you're not actually measuring the variability in the dataset, which is what you're trying to measure. That's his only point. He's perfectly qualified to offer that, as a statistician.

The only other point that the State makes as to Dr. Cowan's argument is they suggest that he analyzed the wrong dataset because he discusses how following Dr. Olsen's instructions set out in his report, you can actually take their master database and run the queries, the data queries he says he ran and end up with SW3. You have to do other things. Dr. Olsen -- Dr. Cowan demonstrated that.

He then ran some tests on SW3. And the plaintiffs say, well, if he couldn't reconstruct SW3, he must have run those tests on the wrong dataset.

Well, the State separately produced SW3. They gave us an Excel chart which had all the SW3 data on it. So that's what Dr. Olsen -- Dr. Cowan used to run those analyses, Your Honor. But that's the sum total of Dr. Cowan.

THE COURT: I'd forgotten he contends that the -- that there have to be additional manipulations of the data to get the results, because he's run it and he can't get where Dr. Olsen got.

MR. TODD: Right. And in the briefs, we gave you some examples, some attachments showing where they don't add up. If Your Honor has any other questions on Cowan?

THE COURT: No.

MR. TODD: To conclude with Dr. Olsen relatively quickly then, Your Honor, let me go back to the first question you asked: What is methodology? What is he actually selling

here?

What Dr. Olsen is selling is a test for going out in the environment, testing a sample for 26 things and seeing if it appears in certain proportions, in certain ratios; and if it does, saying, well, that must be poultry litter.

The difficulty, Your Honor, is that every time we've poked a data point and we've said, what about this one, let's talk about this one, Dr. Olsen has had to go back into the field to do more analysis to either shore up his original opinion or come up with a new opinion.

Mr. Page's argument made much more clear than I ever could that Dr. Olsen's ultimate determination that anything from PCA 1.3 or higher, anything within that red oval, his determination that that's poultry litter, that's his subjective analysis. That's nothing that the PCA dictates, Your Honor. That's based on his subjective evaluation of the data and of his field work.

And that's what's changed over time. That's why in the third errata, we see points moving in both directions, things that were impacted are now not impacted, things that are not impacted now are impacted. That's because it's all subjective. It's not at all driven by the PCA.

But what he's selling is the PCA, Your Honor. But the problems with the data, the problems with the points that don't match up, don't satisfy his own criteria, demonstrate

that at end of the day what he's selling is not reliable.

Mr. Olsen talked a lot about -- he talked for some length about their feed theory and how this is reliable because they looked at what was in poultry litter and looked at the chemicals, and he talked about poultry leachate and how they did the test to know just what was in poultry.

Well, this brings you back to a point I made in the beginning, which is that Dr. Olsen ran a lot of runs, most of which are not in his report. He ran a report -- he ran a run early on where they looked at the poultry leachate. They took the results of those samples and they ran the PCA, and those samples didn't plot anywhere near the allegedly poultry edge-of-field samples.

And so, Your Honor, that run was not included as a principal run or even discussed in Dr. Olsen's report. It's another example of something that was inconsistent.

THE COURT: What was it?

MR. TODD: The run where he took the poultry litter leachate results that Mr. Page talked about, they ran those. And the edge-of-field samples are here, and the poultry leachate samples are up here. They weren't close at all, suggesting, Your Honor, that the edge-of-field poultry samples are not reflective of what actually runs off poultry litter, at least according to their lab tests. That's just another one that didn't make it and wasn't important in the final report.

To sum up, Your Honor, Dr. Olsen is offering a subjective analysis. It's novel. It's never been tested outside this litigation. And I think we've pretty convincingly shown that he consistently has to force his conclusion onto whatever data he is presented with at any moment in time. Your Honor, this is unreliable. Thank you.

THE COURT: Thank you very much.

Anything else?

MS. KLEIBACKER: Your Honor, I was just going to address Dr. Murphy.

THE COURT: Good. Thank you.

MS. KLEIBACKER: I'm Krisann Kleibacker Lee here on behalf of the Cargill defendants. I'll be very brief.

Dr. Murphy's report, as you've seen, has two distinct functions. One is to criticize Dr. Olsen's PCA. Most of those criticisms have been thoroughly covered in the Olsen discussion earlier this afternoon, and only one of the many criticisms levied is at issue at all here on Daubert .

The State has only challenged one singular ground on which Dr. Murphy criticizes Dr. Olsen, and that's the use -- Dr. Murphy's use of multimedia PCA.

The other piece of Dr. Murphy's opinions are an affirmative analysis that he ran using the State's data, a PCA analysis that he ran. And the Cargill defendants submit that it's the conclusions that that analysis reached that the State

now wants to exclude.

The important thing to consider as to that second point about the Cargill defendants is that over the last day and a half, you've heard a lot of problems with the State's expert case against the "industry" and the poultry integrators. But this, of course, is not a class action; and to prevail, the State is going to have to prove causation against each individual company. This is going to be an issue at summary judgment.

The defendants believe that the State cannot prove such specific causation. And the Cargill defendants in particular have disclosed company-specific experts on this point. One of those such experts is Dr. Brian Murphy, another is a Dr. Andy Davis. There will be similar criticisms levied against Dr. Davis that will be discussed later this afternoon. I just wanted to preview that.

THE COURT: You might not be surprised that I haven't had time to dig into the motions for summary judgment yet.

MS. KLEIBACKER: Not at all, Your Honor.

THE COURT: My understanding is that Dr. Murphy was retained solely to examine and rebut Dr. Olsen's expert opinions, correct? Or are his opinions going to be -- or are you wishing to offer him in connection with summary judgment?

MS. KLEIBACKER: Dr. Murphy was retained with two goals, and he was retained specifically by the Cargill

defendants, which is why I previewed --

THE COURT: I'm aware of that. You-all are the only poultry-specific, or the only ones I'm aware of, with regard to company-specific exerts, right?

MS. KLEIBACKER: Yes.

THE COURT: All right.

MS. KLEIBACKER: So, yes, Dr. Murphy renders both a critique of Olsen, which certainly, just as with Drs. Cowan and Johnson, if the testimony of Olsen is not at trial, we certainly would not put any of that portion of his report critiquing Dr. Olsen in --

THE COURT: I understand that.

MS. KLEIBACKER: -- but in addition, Dr. Murphy renders affirmative opinions with respect to the Cargill defendants, and those opinions are challenged on Daubert today.

THE COURT: That's in connection with your motion for summary?

MS. KLEIBACKER: Yes.

THE COURT: All right. And it's basically for the proposition that there's no evidence of any determinable downstream concentrations of chemical and bacterial content emanating from a Cargill-related grower; is that correct?

MS. KLEIBACKER: Yes. And none of the evidence of the State's shows that, yes. Dr. Murphy limited his work to the same evidence on which Dr. Olsen relied, the same

parameters and the same data. So the critique is in absence of evidence essentially. And --

THE COURT: You're not saying that there's not phosphorus from Cargill-related growers getting into the IRW; you're just saying they haven't proved it?

MS. KLEIBACKER: Yes, Your Honor. And specifically on the phosphorus point, this is a -- Dr. Murphy has made pains during his deposition to explain that he wasn't retained to look at source issues. He has no opinion as to the source of phosphorus. So the State's arguments which they just raised for the first time on reply about this conflict -- supposed conflict between Drs. Murphy and Johnson hinging in part on an opinion that the State attributes to Dr. Murphy, an opinion that he has not made that they cannot cite to anything in his report or deposition that supports it, that the opinion that the pervasive phosphorus pollution in the IRW is the result of native soil runoff -- that's quoting from the State's reply brief at page 3 -- it's not supported. In fact, in Murphy's deposition, he repeatedly stated he was rendering no source opinion.

THE COURT: You're telling me that whether he says that explicitly or not, you're contending that Murphy is not taking that position?

MS. KLEIBACKER: Right. His position is absence of evidence. I should also point out --

THE COURT: Okay. How do you respond to Dr. Johnson, your codefendant's expert's statement, that a multimedia approach is inappropriate in this setting?

MS. KLEIBACKER: Well, I don't think Dr. Johnson made that statement. Dr. Johnson and Dr. Murphy work together on PCA issues. Dr. Johnson wrote the chapter on PCA in Dr. Murphy's environmental treatise. They're on the same page literally and figuratively on PCA.

And we point out in our response brief that -- actually, no, we don't, because this argument wasn't raised. I think that what they're pointing to there, the section in his report -- in Dr. Johnson's report, I should say, is that a poultry signature isn't preserved from solid to liquid media.

Dr. Murphy doesn't disagree with that point. He, in understanding that the signature will change between the media, accounted for that in his sophisticated PCA, multimedia PCA that he ran. That's what his MM PC1 line does, it accounts for that change. I think this is summarized well in the declaration that we submitted in support of our response, which has not been at all challenged. That's Exhibit E to our response brief, paragraph 8.

I don't think -- I think really that this is a situation of straw man versus straw man and that --

THE COURT: A lot of straw men being set up on both sides here.

MS. KLEIBACKER: I really don't think there's --

THE COURT: A lot easier to knock down a straw man than the real thing. All right. Anything else?

MS. KLEIBACKER: Well, your Honor, I would just point out that the two criticisms levied against Dr. Murphy are in the opening brief expressly based on opinion by Dr. Loftis that has now been excluded.

And there is -- there's not even an offer of proof actually as to the declaration to Dr. Loftis that pertains to Johnson, Murphy, Cowan and Davis. It's off the table.

And without that support, all that the State can offer are assertions of counsel, arguments by lawyers.

And we heard some criticism yesterday of Daubert motions rested on that ground. I would just say that's all that's left with respect to Dr. Murphy.

I've got a lot more in my notes, Your Honor, but I know we're running out of time. I'd be happy to answer any of your questions on that.

THE COURT: It's 2 o'clock, and I think we've ruled on four of the 17 motions. I don't believe so. I think I'm adequately -- anybody want to take all these guys' testimony for this hearing?

Anything else?

MR. PAGE: No, Your Honor.

THE COURT: I'm going to step back and see if we can

put together some reasonable thoughts on this. We'll take a short recess.

(Whereupon a recess was had.)

THE COURT: As to Dr. Cowan and the Daubert motion pertaining to him, No. 2072, again, the Court finds that the reasoning and methodology underlying his statistical testimony at this time with regard to Dr. Olsen is statistically and mathematically valid and can properly be applied to the facts and discipline in issue.

Although Mr. Page has called some of Mr. Cowan's conclusions into question, Cowan's reasoning may be considered in connection with the issues raised with Dr. Olsen's report.

Dr. Cowan's reasoning regarding incomplete data and the incomplete dataset is reliable and may be heard by the Court.

Motion No. 2072 is denied as to Dr. Cowan's opinions pertaining to Dr. Olsen.

With regard to the motion in limine to preclude the expert testimony of Brian Murphy, No. 2074, Dr. Brian Murphy was retained by the Cargill defendants to examine and rebut Dr. Roger Olsen's expert opinions, including Dr. Olsen's use of PCA, and to analyze whether Dr. Olsen's work supports a conclusion that any Cargill-related grower is responsible for determinable downstream concentrations of chemical and bacterial content.

Dr. Murphy made four principal conclusions on these topics. As the Court understands it, the State's Daubert challenge goes to Dr. Murphy's fourth conclusion, which is as follows: Because Dr. Olsen did not combine solid and liquid samples in the same analysis, his PCA is not a true "pathway" analysis. A multimedia analysis indicates that Cargill-related growers are not contributing determinable downstream concentrations.

The State alleges the multimedia approach advocated and apparently used by Murphy in this case is not acceptable science. The State also alleges Dr. Murphy's opinion is flawed because his multimedia approach ignored important information about sources such as mass balance and chemical transport modeling.

Finally, the State contends Dr. Murphy's conclusions regarding Cargill-related growers are flawed because Dr. Murphy failed to inquire whether poultry waste was applied on the Cargill growers' property.

Dr. Murphy conducted his own PCA using Dr. Olsen's data to determine whether any poultry litter signature in fact carried through the environmental media when a PCA is, in his view, properly performed.

Dr. Murphy included the sample data for the actual source of alleged contaminants -- that is, poultry litter -- in his analysis in order to determine whether there exists any

signature from the putative source and whether the signature is actually present in soil sediment or water samples collected. Dr. Murphy concluded there is no such signature.

Dr. Murphy has testified that multimedia approaches are scientifically acceptable and that the usefulness of such an approach depends on the types of contaminants and the media in which they are found.

Dr. Murphy testified that the multimedia approach was helpful here because it was one way to incorporate the alleged source -- that is, poultry litter -- into the PCA to determine if it carries through the media.

Although this Court has serious doubts regarding the proposition that there can be no evidence by which a fact finder could conclude that any Cargill-related grower may be responsible for downstream chemical and/or bacterial content, the Court concludes that Dr. Murphy's use of a multimedia approach to conduct PCA is not scientifically invalid and, therefore, meets the Daubert requirement for reliability.

As with other experts, his opinion will be subject to challenge and cross-examination. If the issue gets to trial; however, the State's motion to exclude the testimony of Dr. Murphy, No. 2074, is hereby denied.

As to Glenn W. Johnson, motion No. 2083, Dr. Glenn Johnson was retained by defendants to review and critique the opinion of the State's expert, Dr. Roger Olsen, that Dr. Olsen

had identified a unique chemical signature for poultry litter using a principal component analysis.

The State's Daubert motion on Dr. Johnson appears to go primarily to his sixth opinion, which is that Dr. Olsen failed to recognize the influence of total concentration and geochemical partitioning upon the PCA.

Specifically, Dr. Johnson, in his expert report, contends that Dr. Olsen's PCA approach was doomed from the start because he assumed a geochemical system controlled by unchanging ratios of source diagnostic chemicals and bacteria, whereas certain of these substances and source materials will dissolve in water.

Johnson contends that regardless of source, placement on Dr. Olsen's chart is largely the result -- or placement on a chart is largely the result of geochemical processes.

The State, in its motion, contends that this opinion is invalid because Johnson clearly does not understand phosphorus, and this alleged misunderstanding led him to base his opinion on the false premise that most of the phosphorus in the IRW is particulate in nature when, in reality, it is mostly dissolved.

Further, the State characterizes Dr. Johnson's opinion as being that IRW water quality problems are a result of natural processes.

This Court has reviewed the report and other

materials submitted by the parties. The Court does not believe Dr. Johnson has, as alleged by the State, opined that IRW water quality problems are a result of natural processes. Rather, Dr. Johnson has criticized Dr. Olsen's approach and, thus, his conclusions because Olsen's PCA methodology does not take into account the question of whether and which components and source material, such as poultry litter, cow manure and wastewater treatment plant effluent, dissolve in water.

Dr. Johnson characterizes this failure as a flaw that compromises the reliability of the PCA and, thus, the conclusions of Dr. Olsen.

The Court, having reviewed Dr. Johnson's report, declaration and deposition testimony, finds that Dr. Johnson's methodology is sufficiently reliable to meet the requirements of Daubert . Therefore, the State's motion to strike Dr. Johnson's testimony is denied.

The Court has to do -- put together its thoughts with regard to Dr. Olsen. I will download some thoughts here that I had on the computer, go back and work on those a bit more. And we'll take a recess.

(Whereupon a recess was had.)

THE COURT: As to the motion to exclude Dr. Roger Olsen's principal component analysis testimony, No. 2082, the Tenth Circuit has recognized in this case that an expert's testimony is unreliable when it misapplies a reliable

methodology.

Number 1, Dr. Olsen has applied the PCA methodology in a novel way and has arrived at conclusions that result in too great an analytical gap between the data and the opinions proffered to be determined reliable.

Despite decades of poultry research, no one else has applied the PCA methodology in such a way as to identify a "poultry signature."

Number 2. The application of the methodology has not been subjected to peer review by anyone unconnected with this lawsuit. PCA is a statistical method of analyzing data. It uses a series of equations to identify patterns common to a large dataset.

As a result, Dr. Olsen was required to make discretionary, subjective decisions about which data he would enter into his calculations. The discretionary, subjective decisions in his methodology have not been tested or peer reviewed.

Number 3. Dr. Olsen's methodology is subjective and inconsistent; thus, unreliable. The materials before this Court suggest he has forced his conclusions to match new and evolving data.

In reaching this conclusion, the Court has considered the following:

A. Olsen does not sufficiently explain his criteria

regarding how he differentiates his principal runs and his other sensitivity runs.

B. Dr. Olsen does not sufficiently explain why he has very recently changed his poultry impact threshold which results in a significant shift in allegedly "poultry-impacted" samples changing previously poultry-impacted samples to nonimpacted samples.

C. Dr. Olsen's ovals are subjective evaluations of the data.

D. Dr. Olsen's treatment and explanations of certain wastewater treatment plant samples and cattle samples have shifted and changed in the face of data, showing such samples to be poultry impacted.

He first claimed to see a definitive cattle signature, but has now backed off that position.

E. Though Dr. Olsen ran the log adjusted runs SD1 and SD6, and SW22, which Dr. Olsen had previously determined to be "important," plaintiff has submitted only two runs previously determined to be important.

Specifically, Dr. Olsen ran SW3 and SW17 after log adjustment, which was required after defendants' experts pointed out a fatal math error. Dozen of samples changed classifications in a nonuniform manner across the IRW after the correction, indicating that the math error did, in fact, affect the results.

Number 4. Dr. Olsen's approach does not account for alternative sources of most of the constituents in his PCA.

Number 5. The published literature states that -- and before I do this, let me find out, did the -- do the defendants contend that the software package actually now replaces the missing values with a mean, Mr. Todd?

MR. TODD: Your Honor, it's our understanding that Dr. Olsen works -- we accept the representation by plaintiffs that he used the pairwise deletion function. Because of the manner in which Dr. Olsen had treated the data, he had done something called a Z transformation, which basically wraps the data around zero. So the mean was zero. So it was a mathematical equivalent. Running the pairwise was the mathematical equivalent of replacing everything with a mean. So we're happy to accept their representation.

THE COURT: Does that eliminate your objection?

MR. TODD: No, it doesn't, Your Honor, because our objection was to the effect of having missing data.

THE COURT: That's what I understood.

So Number 5. The published literature states that when a software package replaces missing values with means of the variables, this can bias statistical analysis if these values represent a significant number of the data being analyzed. Here, the replaced data represent a significant number of the data analyzed; thus, rendering the data

unreliable.

Number 6. The sampling procedures underlying Dr. Olsen's report add to the unreliability. Four of the PCA components are bacteria and are unreliable, given the violation of hold time standards previously discussed yesterday by this Court.

I have not taken a break. I'm going to do so at this time. We'll be in recess.

(Whereupon a recess was had.)

THE COURT: Mr. Overton reminds me that I need to rule on that motion. The motion to exclude Dr. Roger Olsen's principal component analysis testimony, No. 2082, is granted.

Our next set of motions here are the Sullivan, Teaf and McGuire motions. Have you-all talked about how you wish to take that up?

THE COURT: Mr. Ryan.

MR. RYAN: Thank you, Your Honor. May it please the Court. My name is Pat Ryan for Tyson Foods. I've had a little bit of deja vu here today, Your Honor. I'm reminded sort of my first day of law school when I walked in and looked around and thought I was clearly the dumbest person in the courtroom. I've certainly been made to feel that way today by Mr. Todd and Mr. Page and others.

I'll do my best to present our position on Dr. Teaf, who we believe is unqualified under Daubert. We believe, A,

he doesn't meet -- he doesn't have the essential qualifications to testify as an expert on the topics in which he is addressing in this case. Secondly, we believe his methodology is flawed.

Your Honor, briefly touching on his qualifications, he has never written a peer-reviewed article on salmonella, campylobacter, E. coli, bacteria in poultry, bacteria in poultry litter, on indicator bacteria or cyanobacteria, all topics upon which he professes to have opinions in this case.

While he has testified extensively, he has never testified on the topics of bacteria, salmonella, campylobacter, E. coli, pathogenic bacteria, effective bacteria in surface water, bacteria in poultry, bacteria in poultry litter, cyanobacteria, indicator bacteria or disinfection byproducts.

He has no expertise in water modeling movement, modeling water body movement with respect to bacteria in identifying risks from waterborne microbiological diseases or microbiological issues associated with the application of biosolids to soil.

He is the quintessential litigation expert. Look at slide one. He was asked in his deposition: "Do you consider yourself an expert on the topic of bacteria in poultry or poultry litter?"

His answer was: "As a result of my activities in this case, I feel like I do have that knowledge, yes.

"QUESTION: Did you have it before you started this

case?

"ANSWER: No, I would say not."

I don't need to read the Court the bottom of that slide, which is the Daubert standard which states it's an extremely important fact for the Court to consider whether the expert became an expert in the lawyer's office or in the laboratory.

With respect to his testimony and proposed opinions in this case, it clearly came in the lawyer's office.

THE COURT: Well, he does have a Ph.D. in toxicology, right?

MR. RYAN: He does, Your Honor, but as I'm going to helpfully address, I don't believe that he applies those toxicological approaches to this case. The toxicology, which is the study -- as I understand, the study of poison, just simply has no application or very little application to this case.

He did no dose response analysis, which is I've always understood to be sort of basic to toxicology. None of that was done in this case.

What he does do is he takes the State's sampling data and tries to draw conclusions based off that data. As Your Honor, I know, is very familiar, you've heard a lot about the indicator bacteria at the preliminary injunction hearing, and while we tried to cross-examine Dr. Teaf about that data at

his deposition, he was largely unfamiliar with it in the sense that he couldn't tell you, for example, how many times the State tested for campylobacter or salmonella or anything else in groundwater or surface water. He couldn't answer any of those questions. He couldn't tell you how many of those were positive, although he thought there wasn't very many.

He, nonetheless, relies on the fact that there are indicator bacteria present for his opinions that poultry litter containing pathogenic bacteria has gotten into the waters of the IRW, and that's what the root cause of the pathogens -- what he considers to be pathogens in the IRW.

Of course, the State testing failed miserably to show these pathogens in water. As Your Honor, I think, generally is aware, with respect to the two pathogens that have been associated primarily with poultry, salmonella and campylobacter, the State, when they combined all of their sampling, evening including the sampling of poultry litter, together with water and soil over -- only three or four percent contained any evidence of salmonella.

And the same is true for campylobacter. They never found campylobacter in groundwater, in soil, in spring water. In fact, they never found campylobacter in poultry litter.

Out of 302 surface water samples that was conducted by the State, only two of these 302 found the presence of campylobacter, and those were not -- those were edge-of-field

samples, Your Honor. These were puddles on the side of the field where poultry litter and, no doubt, other animal manure had been laid.

The jump that Dr. Teaf makes, and where I think he leaves the reservation, is where he says, okay, since we have indicator bacteria -- he makes two jumps. One, from indicator bacteria, I'm concluding there's pathogens present. And then the second jump he makes is, and I'm further going to opine that those pathogens are the result of the application of poultry litter on the fields.

All warm-blooded animals, as Your Honor know, produce fecal bacteria. The simple fact that fecal bacteria is present does not identify the source of that fecal indicator bacteria.

At best, Teaf or any other expert could do in this case, given this set of evidence, is to say that the presence of indicator bacteria tells them that there may be a risk, that pathogens of unknown origin are in the IRW waters. That's the most he can do or anyone else can do, and that's not what he does.

As we can see here on slide two, the Tenth Circuit has already commented once on the failure of the State to link land-applied poultry litter to the bacteria in the IRW, stating, "This precludes a finding that such litter may present an eminent and substantial endangerment."

So the Tenth Circuit has already recognized on the

appeal from the preliminary injunction hearing that the State has to make that connection, and they haven't been able to do it. And Dr. Teaf cannot supply it for him simply on -- for them simply on their ipse dixit.

Now, in our brief, we talked about how other watersheds in Oklahoma and throughout the country have elevated levels of indicator bacteria just exactly like the IRW.

Now, the State dismisses that argument, saying it doesn't matter what goes on in other watersheds, the only thing that matters is what's going on in the IRW. But, of course, as the Tenth Circuit also pointed out, this is important because it demonstrates that you can have these identical conditions without the presence of poultry or poultry litter.

Teaf next tries to support his opinions with respect to pathogenic bacteria in the waterways on the basis of county health department records from Adair County.

And as Your Honor knows, we have very few incidents of campylobacter and salmonella in any of the counties in Oklahoma other than Tulsa and Oklahoma County. By no means was Adair County the county that had the highest rate of salmonellosis or campylobacter disease, but it did have -- it did have more than you would expect it to have, slightly.

It wasn't statistically significant, and no expert has opined that the statistics in Adair County are statistically significant.

I think what is somewhat shocking is that he says this knowing, as Your Honor pointed out yesterday in one of your rulings, that 95 percent of salmonella illness is due to foodborne causes. This is what the CDC has had to say. And with respect to campylobacter, it's 80 percent.

THE COURT: Except that this is a recreational area.

MR. RYAN: True.

THE COURT: And, two, if you're the parent of one of the 5 percent, it doesn't give you very much solace that 95 percent is foodborne.

MR. RYAN: Well, I appreciate when you're talking about a child's health, Your Honor, you're always going to be sensitive and you want to be careful. That thought is not lost on me.

But here, Dr. Teaf has no evidence whatsoever that these diseases -- these disease -- I think there's like eight in one year, or seven. I can't remember exact -- depends on what year you're talking about. We're not talking about very many.

There's no evidence at all, he has no information as to whether those were foodborne or waterborne. There's just simply a dearth of information. So to jump to the conclusion that, A, these were waterborne and, B, they're waterborne because this person has been exposed to the IRW, which he has no knowledge about, is simply unwarranted. It's just a leap of

faith.

You know, I don't know how best to say it. I think Dr. Lawrence -- if you'll remember Dr. Lawrence from the PI hearing, from John Hopkins University, he testified. And we took his deposition, and we asked him about this very same data. And to his credit, he said that this county health data is not useful. It's not useful information in determining whether there is a connection between the illnesses and the land application of poultry.

State Health Commissioner Dr. Crutcher did not find evidence of elevated enteric disease in the IRW. The ODEQ has never found that the land application of poultry litter created an endangerment to human health in the IRW. And to all of these points, the State had no response.

In their response to our motion to disqualify Dr. Teaf, the State did not respond to what Dr. Lawrence had said, that the county health statistics were irrelevant, did not respond to Dr. Crutcher's points, they did not respond to the point from the ODEQ.

Slide number three gives you a little bit more information with respect to what Dr. Teaf really had to say about these statistics from Adair County. I'll give you a moment, if you want, to read this. But the importance is down there at the last paragraph where he says, "No, that's not what I said, I phrased it the way I did for a specific reason. I

believe that the link is there between campylobacter and chickens, and the application of that was exposure to human beings, the bacteria levels in the Illinois River in Adair County and the possibility" -- not probability, not likelihood -- "the possibility that it is related, but I don't believe it's been ferreted out in sufficient detail."

I would suggest, Your Honor, if it's not been ferreted out in sufficient detail for Dr. Teaf, he shouldn't be opining on it before this Court.

Your Honor, you did bring up a point that he is a toxicologist, and that does give him a certain level of scientific knowledge, but I just fail to see where the toxicology is playing any part or any role in his analysis.

What he did in this case, what he really did, was he simply read articles written by other people. He glanced at the state water statistics, and that's about it. He talked to some of their experts. And from that, he starts opining on topics of which he is unqualified.

After the county statistics on Adair County, he tries to rely on Dr. Harwood and Dr. Olsen. I'm not going to address those. Your Honor has dealt with those today. Obviously, those aren't lifelines available to him any longer.

He tries to rely on a TMDL analysis that he performed, he says he performed, in which he concluded that 40 percent of the fecal coliform from animals in the IRW was from

poultry.

The problem with that analysis is that he didn't do any kind of fate and transport. So while that may be what comes from the animal, does not demonstrate in any way that's what got into the waters of the IRW. He did no analysis on that, as slide 9 demonstrates.

We have his testimony there where he -- skipping down again to the bottom:

"So there was no fate and transport element to your work?"

The answer was: "No."

Page 276 of his deposition.

He finally resorts to something again, Your Honor, we heard quite bit about at the PI hearing, this concept of viable but not culturable.

And if we could turn to slide 4. This is really what he's saying. The plaintiffs have conducted hundreds of tests for campylobacter and salmonella, and they didn't find the bacteria in the vast majority of the samples. Nonetheless, Teaf intends to testify to the Court that the Court should assume that these negative samples really did contain campylobacter and salmonella, but were in this viable but nonculturable state.

Seems this analysis, Your Honor, cannot survive Daubert because there's no way to determine an error rate to

such an approach. We could neither prove nor disprove that a bacteria cell that one can't see, one can't culture really is there and it really is not only there, but it's of a specific origin and type associated with poultry. That's what Dr. Teaf would have us accept.

Now, the National Academy of Sciences has written on this very topic of viable but not culturable, and it's on slide 5, and they talk about in this first bullet that it is a concept that is out there in the scientific arena, and these are generally injured bacteria, probably stress from water, predation, ultraviolet rays and the like, and that -- but that they can be identified from samples using various techniques, and they say here biochemical, immunological and nucleic acid and molecular techniques.

Again, skipping down to the bottom of the sheet here, the National Academy of Sciences states, "It is important to note that the environmental and public health significance of injured bacteria, especially those that are viable but not culturable, remains controversial and uncertain."

So while there may very well be bacterial cells that are there and that we can't culture, that are there that we can't identify, there's absolutely no reason to jump to the conclusion, as Dr. Teaf does, that these are -- that if we could culture them and we could identify them, that they would be pathogens associated with poultry or poultry litter.

Your Honor, one of the fundamental things, steps that the State failed to do in this case -- and this is in the bacteria case -- is to test further.

Now, on slide -- I believe it's slide 8, this is a recitation from Dr. DuPont's expert report of the various things that scientists can do to attempt to recover pathogens from water.

And I can't begin to explain all of these to Your Honor. Dr. DuPont, of course, could. But these are more sophisticated culture techniques, molecular culture techniques, techniques involving different media that have been identified by the scientific community as further steps one can take besides simply taking ordinary, run-of-the-mill regulatory water samples.

If you're really trying to find out whether salmonella or campylobacter is in the water, you would take these additional steps and you would try to determine if they are present. The State has failed to do that.

I asked Dr. Teaf in his deposition about these techniques, and on slide 6 and 7 we have his answer. Actually, the first question was asked by John Elrod.

Now -- said to Dr. Teaf, "Now, what would be the method, the more sophisticated method to test for campylobacter that the State of Oklahoma did not use, if there is one?

"I'm not familiar with that."

Then he gave some further testimony down below I'll give Your Honor. I won't read it to Your Honor. You can read it if you wish. But it's clear when you read his testimony, he doesn't have a clue about this. He doesn't know what these sophisticated methods are. He doesn't know how one goes from the run-of-the-mill water testing to these techniques that are designed to pull out the viable but not culturable bacteria if, in fact, it's really there. He doesn't understand those steps, and he can't even identify the names of the tests.

The reason he can't -- again, I'm not trying to pick on him personally. I think he is simply someone out of his area of expertise.

I know that the plaintiffs will say, oh, well, yeah, but he's really an expert on risk assessment. It's not just that he's an expert on toxicology; he's an expert on risk assessment, so therefore, he gets to testify about anything to do with risk.

And I would submit to Your Honor it's fine to be an expert in risk assessment, but the risks that you're assessing need to be in your area of specialty.

Your Honor, Dr. Teaf was in a case that I had last year over in front of Judge Cauthron in Oklahoma City involving Continental Carbon.

THE COURT: Involving what?

MR. RYAN: The name of the defendant was Continental

Carbon Corporation.

THE COURT: Oh, the one up by Ponca?

MR. RYAN: Yes, sir. And Judge Cauthron struck Dr. Teaf's testimony essentially for the same reasons I'm asking this Court to strike it. She found that he really had not done the necessary work to establish the link in that case between air emissions and injury -- personal injury. And his opinions were struck in that case under Daubert .

THE COURT: Didn't she certify a class in that case?

MR. RYAN: She did certify a class, Your Honor. It was a settlement class, but yes.

Your Honor, the other two opinions that Dr. Teaf opines on are cyanobacteria and disinfection byproducts.

The hour is getting late and the arguments are identical. There is no proof or establishment by Dr. Teaf that either cyanobacteria or disinfection byproducts in the water are caused from poultry litter. The link simply is not there, and I won't waste Your Honor's time repeating those arguments.

If there's any questions you have, Your Honor, I'll be happy to try to answer them.

THE COURT: I don't believe so.

MR. RYAN: Thank you.

THE COURT: Mr. Bullock.

MR. BULLOCK: I always get them at the end of the day, one of the privileges that I have.

Let me first address this question of Dr. Teaf's qualifications. The Court will recall that contrary to the defendants' statements, he has testified as an expert on these matters. He testified in this court without a challenge as to his qualifications from the defendants; albeit they challenged his conclusions, but they did not challenge his expertise during a hearing where they felt quite free to make -- to pose Daubert challenges to other experts.

As the Court notes, he's a toxicologist and has been a risk assessor since 1983. And as he testified in this court, he has broad and extensive experience with a variety of risks, and that includes microbiology -- biologic risks involving microbes.

THE COURT: Does biologic risk fall within the general category of toxicology?

MR. BULLOCK: Yes, it does. In fact, the defendants' brief, much as Mr. Ryan progressed today, by the time that they get to their reply, their definition of Dr. Teaf's lack of experience -- and you'll find this on page 2 of their brief -- gets down to Dr. Teaf had not devoted a single day of his professional life to the study of poultry, poultry litter or activities and conditions associated with land application of poultry litter.

Until he got in this case, that's true. But I do not believe in any fashion that that is an appropriate limitation

under Daubert as to an expert witness.

The question, of course, is whether he's -- whether he has the experience to assist the Court and is applying accepted methods and the expertise to opine on the subject matters that he's opining on.

As defendants would have it, in fact, most of their witnesses including, for instance, Dr. DuPont, to whom they rely a great deal both in their brief and in argument here today, he didn't testify as to any such experience and yet feels free to opine on these issues. And so I submit to the Court that there's really no real question as to his expertise.

But what we come down to first is the question of bacterial risk. Now, as defendants would have it, until we find the salmonella -- and they have some -- or the campylobacter, they have some level that they imagined it needs to be found in before there is a risk in these waters.

In fact, Mr. Ryan, in his argument, admitted that there may be a risk, but falls short somehow, he believes, may be a risk is different than there being a risk. I always thought of a risk as being the maybe, and it is redundant to say there may be a risk. Because at least on some level -- and I think the proof is greater than this and that the science is stronger.

But to some extent, when I think of the issues that we're facing with the bacteria levels in this river, the

question which anyone must ask when you see these levels and you understand, as Dr. Teaf will inform the Court, you understand what the various levels are, the risk-based levels, your -- the question for all of us is, is there a significant risk to human health. And for that, we use the water quality standards. They are the overwhelming consensus, scientific consensus which continue to this day.

And while it is true that the EPA and other scientific bodies continue to look at and reassess those and try to determine how they can be more exact and still serve their purpose, they remain today the scientific consensus. And it would be absolutely -- it is a radical proposal to propose that this Court find that when those are exceeded, there is not a significant risk to human health.

That -- the Court would have to go against all of the prevailing scientific consensus to find that because -- but risk, to me, it reminds me of when we were young and we liked to jump off of high things into deep water. And over the years, they've come and they have posted the signs, do not jump. But the reason why we were warned not to do that -- now, I've got to tell you, I did that up on Tenkiller; and during that ancient time, you could still see the bottom of Tenkiller.

THE COURT: Was the sign there?

MR. BULLOCK: No. Today perhaps there should be, because when you jump into water where you can't see the

bottom, there's a risk to human health.

What the defendants would have you do is order that the sign be removed to say that there isn't; because no one has proven that the rock is there, that the risk should be disregarded by the Court. And that neither makes good science nor good sense.

Now, the reason why a risk assessor uses these water quality standards, and what Dr. Teaf has testified to this Court, is because bacteria risks have turned to be more elusive. He depends on -- Dr. Teaf does not present himself as a microbiologist. He depends on Dr. Harwood's opinions, opinions which haven't been challenged in this case in terms of the question of viable but not culturable, and of the other issues in terms of the risks of salmonella and campylobacter being present when you have the -- the risk levels.

So when the defendants move to strike on the basis that Dr. Teaf shouldn't be allowed to testify as to the risk, they are in error there. But that they should not be allowed to attack him from giving evidence which -- where we provide an independent foundation for part of his opinion.

And so at the point where you have that evidence, Dr. Teaf can talk about the risk.

I want to touch on a subject where I think that our advocacy at the preliminary hearing clearly failed and which this Court and the Court of Appeals both bought an argument

that the defendants offered. And that was that there is relevance to the -- both in terms of causation and perhaps risk as to the fact that there are other rivers and a good number of river segments in Oklahoma outside of the IRW which are polluted. And this Court, following their lead, found that that was some evidence as to causation.

I urge the Court that you should rethink that, and part of the basis of rethinking it is Dr. DuPont. Dr. DuPont, when I asked him, I said, does the -- and it's referred to in our brief and quoted there. I asked him, does the fact that other rivers in Oklahoma are polluted with -- have high bacterial levels, does that tell you anything about the cause of bacterial pollution in the IRW?

Dr. DuPont, one word: No.

I asked him, does it tell you anything about the risks of recreating in the IRW?

Dr. DuPont's answer? No.

And logically, that is true when you think about it. Causation, as we've seen in this case, and as the Court has heard a great deal, is a complex matter in any watershed. What are the possible sources? What are the possible transport mechanisms? And so where does it come from? How does it get to the water?

And those need to be examined individually in a watershed. To say that Watershed A is polluted by bacteria,

therefore, from a feed lot; therefore, the bacteria level in the next river is from a feed lot would make no sense. And the reverse of that logic makes no sense.

THE COURT: It's an interesting question, because surely you're right if you look at it within that scope, but when one considers the burden of proof in a preliminary injunction, is it not relevant to mention, because there was testimony at that time, of similar or higher levels in other waterways in Oklahoma that did not have the presence of poultry?

In terms of reflecting on whether or not the plaintiffs had met the heavy burden on the preliminary injunction, is that not relevant?

MR. BULLOCK: Well, the heightened standard of review and what the burden is on a preliminary injunction is one of those things that I continue to struggle with, and that may be part of the explanation for the Court's reliance on that.

What I'm suggesting to the Court, that in terms of this phase of the case, that any relevance of that should itself be given scrutiny because the science doesn't support it in any fashion.

There are multiple sources for bacteria in the environment. This Court found that there were multiple possible sources of bacteria in just this watershed. Recognizing that perhaps you had some doubt as to whether

cattle or septic tanks were raised. All of these other causations were raised.

Well, then to leave this watershed that we've focused on and to say that the pollution in other watersheds informs this because one doesn't have poultry, another has maybe a bad sewage plant -- you know, recently talking of risk, perhaps the Court noticed all the swimmers in the Oklahoma river doing the -- who got sick. That wasn't poultry, I guarantee. But there's some other cause there, and that's just the importance of sticking to the issues here and not getting diverted by what I think is a canard.

THE COURT: I think your point is correct. I mean, we have to focus on this particular watershed and in the context of whatever burden is before us at the moment.

MR. BULLOCK: Now -- so, the issue of risk seems to me to be pretty clear, but it needs -- it clearly warrants expert explanation, particularly in the face of challenges such as we've seen here where you get into the question -- the defendants raise the question of is there risk if you don't find campylobacter or salmonella or don't test for it.

As I said, clearly the overwhelming scientific consensus is that you don't have to find those for there to be bacterial risk. In fact, there's good reason to question whether or not they still might be there.

So that risk is clear. Dr. Teaf should be allowed to

testify as to that risk.

Now, the other question that they raise is the question of causation, that once you get past the concept that, under the water quality standards, the pollution levels in this river pose a risk, defendants then move to, well, Dr. Teaf says it's poultry and there's -- he can't testify as to causation.

And Dr. Teaf really offers two things in what is -- two facto ids, I would say, or two facts which are important, albeit in and of themselves, they don't prove causation, but they're facts or opinions which are admissible and relevant.

First of all, the Court needs to understand that the issue of causation in this case as to bacteria, as it is with phosphorus, those are a -- we intend on proving it with a circumstantial case.

Included in that circumstantial case is the fact that every government agency -- and multiple have looked at this issue -- have found that poultry is a cause of the bacterial pollution in this watershed. That includes the USGS, the forest service, agencies in Arkansas and agencies in Oklahoma. All independent of our evidence here.

And we have the basic physics of the watershed, the karst geology, the thin soil, the amount of bacteria thrown onto those soils. There is where Dr. Teaf provides part of that causation case, and that is he performed what amounts to a mass balance, or the TMDL part of figuring out how much of the

full bacteria load of the IRW comes from poultry.

Now, he doesn't testify as to the geologic forces and the hydrologic forces which transport that bacteria into the water. We understand that for Dr. Teaf, a risk assessor, to be able to testify that this is poultry bacteria, there's other parts of that circumstantial case which need to be filled out.

Because even though the TMDL process, which as you recall, that was the way the defendants initially slipped the issue of other watersheds into the record at the PI, that is the way that process is done. It is -- they figure out the bacteria loads in a watershed, and from that, the science is that that informs them as to causation. And so they write the TMDL based upon those bacteria loads. That's the way it's done.

But that's only part of our causation case, and we're not presenting here that that is the sum total. And Dr. Teaf's TMDL evidence will not rest -- that is not the sole evidence on which he will be giving his testimony.

The other issue that is raised that Dr. Teaf contributes, I think, is the data from the health departments in terms of the incidence of disease.

I suggest to the Court that that is a relevant, probative fact; albeit standing alone would not prove causation, but it is a fact which is consistent with our theory and, therefore, continues to fill out the picture.

It certainly would be considered relevant if there was no incidence of disease in these counties. If they had zero reports, under defendants' theory, that would be a relevant fact. The fact that this is a consistently high incidence of disease, particularly in an area where a great number of people depend on groundwater, groundwater which has been found to be polluted, makes that relevant and admissible evidence.

To the extent that -- and Mr. Ryan jumped over the issues involving the cyanobacteria and also the disinfection byproducts. It appears to me that they have reduced their objections to Dr. Teaf's testimony on those subjects by saying that it was -- that those subjects were the same as the bacteria, that they have reduced their arguments there to the issue of causation. And if that's true, I will address only the causation piece if --

THE COURT: Mr. Ryan, would that be accurate?

MR. RYAN: That's the primary position, Your Honor. We identified all of our positions in our paper. I didn't think Your Honor wanted me to go over the papers that we filed.

THE COURT: So --

MR. RYAN: I would say our principal position on the disinfection byproducts and the cyanobacteria is a simple total lack of any evidence whatsoever that those conditions resulted from poultry litter from these defendants.

MR, BULLOCK: In terms of the causation of both of those, those are -- as to the risk, Dr. Teaf will be testifying. Dr. Teaf is not our witness as to the causation of those. So his testimony should not be excluded on the basis that he has not proven causation.

We will lay a foundation of causation for both the nutrients which caused -- which contribute to the cyanobacteria risk and a foundation as to the causation or the source of the algae and the other matter, which when hit with the -- when taken into a water treatment plant into a -- to be made into drinking water when it's hit with the chlorine creates the disinfection byproducts.

So we will prove the causation of those independent of Dr. Teaf, and then Dr. Teaf will pick it up as to the intake pipe or talk about the -- what is known as the likelihood of formation of the disinfection byproducts. He will pick it up there.

The proof that the poultry industry in this watershed, and particularly the individual companies whom we have sued here, the proof as to their liability will be provided elsewhere.

THE COURT: Cyanobacteria, that's a new one on me. Blue-green algae. Any comments there?

MR. BULLOCK: Unless the Court has some questions.

THE COURT: Could you explain that?

MR. BULLOCK: I can explain what that is.

THE COURT: Because my understanding is that he opines as to the risk related to cyanobacteria.

MR. BULLOCK: Correct. That blue-green algae is a particular type of algae which is caused in warm nutrient-rich waters is where it grows. And it can pose significant health risks. About 24 percent of the samples gathered showed moderate and a few -- a high risk in terms of cyano- -- the cyanobacteria. I'll get the pronunciation.

THE COURT: I've got the Okie pronunciation of "Daubert," so you are forgiven.

MR. BULLOCK: Judge, it's a whole article on the scientific -- or the admissibility of the phrase itself. But -- or how you pronounce it.

THE COURT: It's just 702. What's your view there? It's just a further refinement, right?

MR. BULLOCK: Right. That's the reason why we've been here two days, or will be.

THE COURT: Thank you Supreme Court.

MR. BULLOCK: But a moderate risk -- and it's in our brief, but a moderate risk of cyanobacteria is the potential for long-term illness. And --

THE COURT: Do we have evidence of impermissible levels or exceedances of cyanobacteria?

MR. BULLOCK: What we have is that 24 percent of the

samples were -- that have been examined -- of the samples that have been gathered, showed at least a moderate and some a high risk of cyanobacteria in the waters of the IRW. And that's a very high level, and that is a risk that we believe that the Court should address.

THE COURT: Did he we have a water quality standard with regard to cyanobacteria?

MR. BULLOCK: The source of those standards is the World Health Organization, and that's part of what Dr. Teaf will testify is what their standards are. And that's the accepted standard.

THE COURT: Is the WHO's standard something acceptable or accepted regularly by federal district courts in the United States?

MR. BULLOCK: Well, it's regularly accepted within the scientific and regulatory community.

THE COURT: Well, but I guess the question, then, as a bootstrap article, has any federal district court accepted it as a generally accepted scientific standard?

MR. BULLOCK: I have not seen that case, but I haven't seen one where it was presented either. And, of course, at least as to our RCRA cause of action, the question that it may present an imminent substantial risk to human health, the standards of the WHO would be eminently admissible for the Court to consider in terms of making that judgment.

THE COURT: What other bacterium have exceeded water quality standards other -- let's set aside WHO water quality standards just for the moment. I take it -- the federal government, obviously, has water quality standards.

MR. BULLOCK: Right.

THE COURT: What water quality standards have been exceeded here?

MR. BULLOCK: Those are the ones -- and we covered that -- those are the enterococcus and the E. coli. And the State also has a water quality standard for fecal coliforms.

THE COURT: My understanding, having read quite a bit in this case, was that the State of Oklahoma had not found exceedances in the IRW.

MR. BULLOCK: That's not correct, Your Honor.

THE COURT: All right.

MR. BULLOCK: They have found numerous exceedances on -- within this watershed. I don't remember exactly how many sections there are, but most of these three rivers have been determined to have exceeded.

THE COURT: In areas of recreation?

MR. BULLOCK: Pardon?

THE COURT: In recreational areas --

MR. BULLOCK: Yes.

THE COURT: -- on the IRW?

MR. BULLOCK: Yes. The Oklahoma water quality

standards also have narrative standards which we believe -- and it's clear are applicable also to these waters --

(Off-the-record discussion.)

THE COURT: Anything else?

MR. BULLOCK: Well, let me repeat that for the record. I'm not sure whether the court reporter gets comments -- side bars.

THE COURT: No.

MR. BULLOCK: That the Oklahoma water quality standards, the narratives would -- do cover the cyanobacteria, and so there's a water quality violation there.

THE COURT: You said the narratives.

MR. BULLOCK: Well, there's a numerical standard and then there's a narrative standard. The narrative standard describing the risks to human health. And the cyanobacteria would be covered by those -- by that.

THE COURT: Does it specifically enumerate cyanobacteria or just generally references risk?

MR. BULLOCK: No, it is a description of a risk-based standard, not particularly enumerating the cyanobacteria.

MR. PAGE: Your Honor, if I may just briefly.

THE COURT: Yes, sir.

MR. PAGE: The narrative standard -- I can't quote off the top of my head, but it says essentially that the waters shall be free of toxic substances. And that particular

standard is used by the Corps of Engineers to evaluate the water, such as on Lake Tenkiller. It's the Oklahoma narrative standard.

THE COURT: Anything else?

MR. BULLOCK: Judge, I guess there's some concern as to whether the defendants are continuing to urge that the -- on the disinfection byproducts that there's not a significant risk to human health due to the level of those found.

There are two standards as to those. The first is the maximum contaminant load. And that is not a risk-based standard; that is a compliance standard that was established based upon, in part, the risk, but also issues of technology and cost of making the necessary repairs to water treatment plants. And so a type of political compromise was reached in term of setting the MCL standard.

You also have the maximum contaminant load goals. Those are lower, and those -- that is the risk based standard where when that is exceeded, there is recognized a significant risk to human health, albeit the water company is still allowed to supply the water.

And so Dr. Teaf will be testifying as to the fact that there are violations of both standards within the IRW. Of course, far more significant violations of the MCLGs than of the MCLs. But we have both violations, and they also pose a risk to human health. And as I said, we will prove the

causation of that polluted water getting to the intake pipe through other witnesses.

THE COURT: Could you explain to me, because these are new to me as well, the HAA5s, the haloacetic acids. Those are disinfection byproducts --

MR. BULLOCK: Right.

THE COURT: -- from treatment at wastewater treatment plants, I take it.

MR. BULLOCK: Right.

THE COURT: Do you know anything more about those?

MR. BULLOCK: I know the basics of it, Judge -- actually, these are water treatment -- freshwater treatment.

THE COURT: Thank you.

MR. BULLOCK: When a water -- freshwater treatment plant will intake water which has a high organic content in order to -- and largely that's algae, but that's not all it is. When those go into the treatment to be purified, one of the things that they do is hit it with a high dose, in this case most generally, with chlorine. You can also hit it with bromines and create another group of disinfection byproducts. But both are recognized as posing a risk of cancer.

THE COURT: Is it clear that both are used in water treatment plants that dump into the IRW?

MR. BULLOCK: Yes, sir.

THE COURT: I say "dump into." Obviously it would go

into the freshwater system and then eventually find its way into the wastewater system, correct?

MR. BULLOCK: Correct.

THE COURT: Ms. Burch says no.

MR. BULLOCK: Well, we'll let her do it.

THE COURT: Please. I'm curious.

I'm sorry, it's Ms. Porter -- I'm sorry, Foster. I noticed all of the written materials say Burch.

MS. FOSTER: I just officially changed in the court on Friday -- or Monday.

THE COURT: Congratulations.

MS. FOSTER: I want to be accurate there. Thank you.

Basically what we're talking about are public water supplies located in the watershed that take their water -- they have a water intake from either the river or Lake Tenkiller, and it goes into the water treatment plant where it's treated with chlorine in this instance.

In the process of treating the water with chlorine, there are organics in the water. The reaction causes the formation of disinfection byproducts.

THE COURT: I see.

MS. FOSTER: Then that is supplied to consumers, whoever rely on that water supply.

THE COURT: Now, my understanding, too, here, isn't

some of the water that actually winds up in the Illinois taken from Hudson and then to various residences in the area?

MS. FOSTER: Not that I'm aware of. Hudson gets transferred into another -- I think into Fort Gibson, if that's what we're talking about. But the Illinois River -- the public water supplies that are used in the Illinois River do serve as purchase water supplies for some other locations, but I don't think Hudson has anything to do with it.

THE COURT: There's no import from other basins into the IRW?

MS. FOSTER: Not that I'm aware of. There may be some, but not in the ones we're talking about here. The ones we're talking about are water supplies that actually take their water from this particular watershed, treat it and have issues with DBPs?

THE COURT: I'm getting somewhat far afield, but I was just curious.

All right. Anything further?

MR. BULLOCK: No, Your Honor, not unless my co-counsel have some more to add.

THE COURT: Mr. Ryan.

MR. RYAN: Very briefly, Your Honor. The fact that Dr. Teaf has testified on one occasion about a microbe is hardly grounds and qualifications for him to be testifying at length before this Court on indicator bacteria and pathogenic

bacteria, specifically campylobacter and salmonella, of which he knows nothing.

Now, the plaintiffs suggested that the defense wanted to throw out the water quality standards prevalent in the United States. That's not the case at all.

I think everyone who is knowledgeable on this topic would say that these water quality standards are not very good. When they started off, the standard was simply fecal coliform.

Then it was discovered, well, the problem with that is there are fecal coliforms that -- rather, coliforms that are not from animals, not from warm-blooded animals. So they tossed that out.

The EPA continues to study it, and recently has said they don't think fecal coliforms is a very good standard for freshwater. They've recently said they don't think enterococcus is a very good standard for freshwater. They think it's okay for marine water, but for freshwater they think E. coli is the best, but it's not very good. And WHO is working on improving those standards daily.

But we're not suggesting to this Court that you advocate the water standards in the United States. They are what they are. They're not very good, but they are what they are. They are what regulators use. But they don't source bacteria.

And while I appreciate Mr. Bullock's discussion of jumping into water when you can't see the bottom and all that and the risk associated with it, that really doesn't touch on the point of that there's absolutely a complete dearth of proof in this case by the plaintiffs demonstrating that the bacteria that they think is there, which isn't proven -- you understand we can't culture it and we can't find it, we have to take somebody's word it's viable but not culturable, but it's there, kind of like the Emperor's new clothes.

But if we could culture it, which they can and chose not to by more sophisticated means, but if we could, then it would be from these defendants. There's absolutely no proof whatsoever in this record on that point. And Dr. Teaf simply cannot supply that missing element to the State's case.

THE COURT: That's why I asked Mr. Bullock in terms of whether the water quality standards have been exceeded. And he says yes with regard to E. coli and enterococcus.

MR. RYAN: The water quality standards for indicator bacteria have been exceeded. No question about that. If I led you astray, I apologize. No question.

I'm drawing the distinction now, Your Honor, between indicator bacteria, which are not pathogenic, they're not harmful. Everybody agrees. Dr. Teaf agreed on that. They're not harmful.

So indicator bacteria, when tested in these waters

and throughout the entire state of Oklahoma, show exceedances. No question about it. But the problem is, their obligation here is not to just show indicator bacteria; they have to show that there's harmful bacteria, bacteria that harms human health is in these waters. They haven't done that. And they most certainly haven't shown that if they could ever find those harmful bacteria and culture them that they would be shown to be, A, associated with poultry or, B, poultry litter. That's simply a big hole in the State's bacteria case, and one that Dr. Teaf simply cannot -- he simply cannot supply for the State.

You know, Mr. Bullock talked about how ODEQ and the health department and whatnot had found violations. That's just simply not true. Again, as to bacteria, not pathogenic bacteria. Yes, on indicator bacteria.

But this is the State bringing this suit. And the State itself has not closed these waters. The State itself has not found there to be a danger to human health; and yet the State is the plaintiff in this case, wanting the Court to do it.

It seems to me it would be more appropriate for the State to make that finding in the first instance instead of asking this Court to make its own finding. I'm sorry, Your Honor. I can tell you have a question.

THE COURT: Well, understanding that potential

weakness, I suspect, plaintiffs talk about these other problems with regard to byproducts of disinfection and cyanobacteria. Your response there?

MR. RYAN: I'm going to ask Mr. Jorgensen to respond to that, Your Honor. I know about as much about cyanobacteria and disinfection byproducts to fill a small jigger probably. It wouldn't be fair to the Court to listen to me talk about those topics. I have about as much knowledge as Mr. Bullock displayed.

THE COURT: The power to have large -- the power to order.

MR. RYAN: I'll sit down, Your Honor, but let me just briefly state that this idea that Arkansas and Oklahoma and the geologic service have found violations of pathogenic bacteria in these waterways is just not a statement founded on fact. There's been no such finding. So I take issue with, of course, what Mr. Bullock stated in that respect.

There is no standard of the World Health Organization -- I do know that much -- on DBPs and cyanobacteria that are applicable in this case. I think Ms. Burch stated it correctly. But if I might, I'd like to --

THE COURT: Said that there are no standards.

MR. RYAN: Well, there's the very general standard that she stated about, you know, we should have clean waters, but there's not a standard such as we have with enterococcus

and E. coli. There's not a measurable standard.

THE COURT: I think her reference was to the Oklahoma Water Quality Standards and the narrative standard within that.

MR. RYAN: I think she's absolutely right on that.

THE COURT: Mr. Jorgensen.

MR. JORGENSEN: Your Honor, I think we're blending a little bit the McGuire and Teaf, but they're in the same group for a reason. So with that, I'll go ahead and answer your cyanobacteria question --

THE COURT: Please.

MR. JORGENSEN: -- and then stop, and we can pick up with McGuire from there.

THE COURT: All right.

MR. JORGENSEN: So in the Dr. McGuire challenge, plaintiffs -- one of the challenges they bring against Dr. McGuire is they say Dr. McGuire is not a toxicologist. He honestly and candidly admitted at his deposition over and over again, I'm not a toxicologist, I don't have a degree in human health.

But this argument that Mr. Bullock has put forward shows exactly why the motion against Dr. McGuire should be denied.

Dr. McGuire, as you probably know from reading the materials, for more than a decade ran the largest drinking water treatment system in America. He provided safe drinking

water to 16 million people in Southern California. That was his job, to run that system. And cyanobacteria is part of that process.

So here's some of the points he makes in his report. And you'll find them, Your Honor, in case you're interested, on pages 79 to 87 of the McGuire report.

So the Safe Drinking Water Act requires EPA to research and regulate contaminates that pose a risk to public health in waters, raw waters that are going to be used for public drinking, that are going to be treated and become part of the drinking water supply.

And he points out, because he sat on these commissions, that EPA considered whether or not to regulate cyanobacteria and other freshwater algae and their toxins.

Now, this is important to point out, Your Honor. Cyanobacteria and blue-green algae are not the same thing. I think it might have been said to you a moment ago that they were the same thing, and they're not, and that's in Dr. McGuire's report. They're, in lay terminology, frequently used interchangeably, but it's not correct.

And one of the criticisms that Dr. McGuire offers of Dr. Teaf is that he doesn't -- he evidences a lack of knowledge about cyanobacteria and the treatment of it in drinking water supplies by making this mistake. And this is, again, one of the attacks plaintiffs bring against him. You'll see in their

motion they say, again, how could he talk about human health, he's not a toxicologist. But he says, but I am a man who treats drinking water supplies, and this is the context where this comes up.

So he says on multiple occasions, EPA -- and he lays this out, the dates the EPA did that -- studied whether or not to regulate cyanobacteria in drinking water. And specifically, it's not -- the cyanobacteria, it's kind of an odd name, Your Honor. They're not actually bacteria -- they're not actually algae; they're a kind of bacteria. They produce a particular kind of toxin. I think I just said that backwards. They're not bacteria; they're a kind of algae.

But anyway, they produce a toxin. It's not the bacteria itself that is harmful; it's potentially -- what's potentially harmful is microcystin, the substance that they put off.

Again, as he explains, on multiple occasions, they decided there was insufficient evidence that this was a human health risk and should be regulated in drinking water. That's what the EPA decided.

THE COURT: How long ago did they conclude that?

MR. JORGENSEN: The last time -- he points out that it's an ongoing process, and it has been done repeatedly. The last time was in 2001 and 2008 are the last two that he references on page 80.

So then on pages 80 and 81 of his report, he goes through the fact that the World Health Organization has issued provisional guidance concluding that perhaps there's a risk here, but there is no risk in -- or a standard in drinking water systems.

Again, this is the criticism that Dr. McGuire brings against Dr. Teaf. And then again, the plaintiffs say, well, how could he say that, he's not a toxicologist.

So Dr. McGuire, again, in these materials lays out some material for you on cyanobacteria. Mr. Bullock just barely talked about this. He talked about how in 23 percent of plaintiffs' samples they found either cyanobacteria or the material that puts off microcystin.

So Dr. McGuire points out that USGS did a survey of 1,150 lakes --

THE REPORTER: Could you please slow down?

MR. JORGENSEN: I'm so sorry to go so fast. I'll do that over again, just to make sure you got it. So that Dr. McGuire points out that the USGS did a survey of 1,150 lakes, reservoirs and ponds all around the United States. And essentially the background level that they found is 32 percent of the samples.

Now, you've heard Mr. Bullock say, I believe, the plaintiffs found 23 percent of the samples.

So again, one of the points that Mr. McGuire's making

as a criticism of Dr. Teaf is, you're below background. Again, the criticism comes to him, how can you say that, you're not a toxicologist. He doesn't need to be a toxicologist. This is the realm of treating drinking water.

So plaintiffs sampled Lake Tenkiller. They found very little.

And then the last point that he makes, and then I'll stop here and allow plaintiffs to begin their McGuire presentation, but Cooke and Welch claim that the normal drinking water treatment processes that they don't screen out microcystins, that they're ineffective, and so this risk of -- this risk that EPA said wasn't there or there was insufficient evidence to decide that there was a risk, that it wasn't being treated here. And then he points out, I have treated drinking water treatment all my life.

We learned at his deposition, at Dr. McGuire's deposition, he's recently been awarded the top prize for drinking water treatment professionals. Essentially the Nobel Prize of drinking water treatment professionals.

So his point is, that's just wrong. I mean, I've done this -- he said, I've done this all my life, and they are wrong.

So that's a flavor of what we're about to get into, but I hope it answers the question you had about cyanobacteria and cyanotoxins.

THE COURT: Thank you. Let's take a short break, and we'll be back.

(Recess.)

THE COURT: Before we continue with regard to this set of experts, I'd like to ask a question that's hopefully a practical one. It may lead to some efficiencies with regard to the resolution of this set of experts.

Has anyone thought whether or not the trial in the light of the damages ruling, the Cherokee Nation ruling, is going to be jury or nonjury? Because to the extent -- this is my thought. To the extent that Mr. Bullock has said that Dr. Teaf will not be a causation or source witness as to these matters but merely a risk witness, he stated that they intend to prove causation and source by other means, and if this matter is before the Court, then why can't the Court simply deny these three motions in this set and weigh the testimony at summary judgment?

I don't even know if Dr. Teaf is presented at summary judgment in any respect, but -- and/or at trial.

MR. BULLOCK: Judge, I think that as the case currently stands, that might be true, but we are going to file and have -- and are trying to get it done as quickly as possible, a motion to reconsider that order. We believe that there are some fundamental errors in that, which it's not your standard make your record, counsel.

THE COURT: I understand. You know, of course we're not discussing it here, and I understand that there may be, and was at the hearing, some dispute as to whether or not the agreement was, although cooperative and although an agreement, whether it was a cooperative agreement; but even if one were to limit the statute on the State side and the law of the statute on the Cherokee Nation side to water transfer, water ownership agreements, you still have the retroactive standing problem, do you not?

MR. BULLOCK: Well, the focus of the motion, and I can't -- we haven't come to a final on it, will be on the Court's CERCLA claim. Particularly the NRD damages would still entitle us to a jury trial.

THE COURT: Okay.

MR. BULLOCK: So it's a trustee issue.

THE COURT: Well, I've asked that question in chambers: Where are we in terms of a jury on CERCLA? And I've gotten -- no one has been able to tell me. And, frankly, the briefing wasn't very helpful in that regard either, mainly because the issue wasn't raised in the briefing, right?

MR. GEORGE: Correct, Your Honor. We've been wrestling, as the plaintiffs have, with the same question. And we have some research and tend to frame it up into a motion to strike the jury demand.

Our research has taken us to the conclusion that as

this case is currently postured, it is not a jury trial, it's a bench trial. The matters are equitable as opposed to matters at law, so in keeping with the Court's comment about practicalities, we see some efficiencies in the direction that the Court has laid out.

If the Court is interested in further briefing -- or I guess it would be initial briefing on the jury question issue, we could be in a position to file it promptly.

THE COURT: I want briefing to be thorough and well thought out. Obviously, I don't want any preliminary briefing. I've got enough briefs to look at, believe me.

But what are your thoughts with regard -- just to give me a preview of things to come. Because I have asked these very same questions here around the courthouse, and no one really knows. We just don't have that many CERCLA cases here.

MR. GEORGE: True.

THE COURT: Interestingly, we had one of the top lawyers at the Department of Justice here last week from the Environmental and Natural Resources Division who's been there for over 30 years, I think she said 35 years, and she was interviewing my father, who was the head of that division. They're hitting their 100th anniversary here this year, and interviewed him down in Judge Kern's chambers. And I was thinking, boy, I wish I could ask her this question, but,

unfortunately, the judicial ethics that have just recently been revised and issued within the last week make it very clear it is unethical to ask those questions, even if someone who knows the answer, without getting you-all's approval. So I couldn't ask her the question.

So I'm glad, Mr. Bullock, you've raised it. But apparently you've come to the conclusion that there are still jury issues with regard to CERCLA.

MR. BULLOCK: Well, and particularly that there should be -- and I'd like to see Mr. George's brief, and we'll respond promptly the well thought out on that. But I think that before we start striking the jury trial and get ourselves off the track that we ought to look at these two issues. And so that's -- of course, the Court is the one that ultimately will make that call, but we want to be sure that before we get off that track that the Court is informed as to the various positions.

THE COURT: Well, you understand why I ask the question --

MR. BULLOCK: I do.

THE COURT: -- because if you're serious -- if both of you were to agree that this is a nonjury matter -- and, frankly, I've bounced around the idea of an advisory jury here, although I've only used advisory juries in the context of nonjury matters that had issues of fraud. Advisory juries are

very, very helpful in that situation. We don't have a fraud claim here. So I don't know that an advisory jury would be helpful, although you can think about that as well.

MR. JORGENSEN: Your Honor --

THE COURT: I'm sorry, Mr. Jorgensen. In that regard, frankly, some of that thought that I've had is in self-interest because typically when you have a jury before you, lawyers don't dump documents like they do in a nonjury trial because you-all realize that jurors can only take so much.

So, Mr. Jorgensen.

MR. JORGENSEN: Your Honor, I would be glad to answer your question. I had to give up my weekend to researching this. We think it is well thought out and well researched.

There's really three issues that you need to address. The first is as to Counts 4, 5 and 6 which are remaining in an injunctive posture but without damages, if you know what I'm talking about. This is nuisance, nuisance and trespass.

The Supreme Court has ruled repeatedly that in cases where only injunctive relief is sought without damages, even under nuisance, public nuisance and trespass, that there is no right to a jury trial because under the 17th Amendment, of course, you look to the right to a jury trial only attaches if your claim is the kind that would have been tried at law in 1791 and injunctions were not. So that is absolutely settled.

Then you've got Count 3, RCRA. Under Count 3, there's only a handful of cases, but they all go our way and they all say collectively every case ever to address this issues say -- says that RCRA did not exist in 1791 and there is no jury trial.

THE COURT: I think RCRA is very clear, from what little I've looked at.

MR. JORGENSEN: Exactly. No jury trial under RCRA.

THE COURT: They've only touched on CERCLA. They're focusing on CERCLA as I understand.

MR. JORGENSEN: Let me move to that then. On CERCLA, of course, first you would have to reverse what I'm sure is a well thought out and a lot of time into your opinion, you have to reverse yourself on the Cherokee motion, reinsert the CERCLA claims which have been dismissed. There are none remaining in the case.

At that point, if they were reinserted, we could research that and quickly answer your question. There is a division in CERCLA law; some subsections of CERCLA are entitled to a jury trial, and the Supreme Court has resolved that. Some subsections are not entitled to jury trial.

But I hate to skip ahead, both because I didn't research that recently, that's just based on knowledge, and because it seems to me unlikely that we're going to get there because you have to reverse yourself first.

THE COURT: Well, if you've studied my decisions, I'll do it if I think it's warranted. I have no pride of authorship at all. None. I just prefer to be right.

MR. JORGENSEN: I urge you not to do it when you're right.

THE COURT: Well, there's apparently a division of opinion on that matter.

All right. Well, let's plow on.

MR. BULLOCK: I will be very brief because Mr. Jorgensen really was getting into a preemptive strike in terms of the McGuire Daubert motion, raising issues that, in fact, were not raised as to Dr. Teaf testifying as to his motion.

But first of all, let us be very clear: There is no motion pending before the Court that there are not -- or that -- well, let me post it positively. There are multiple violations of water quality standards in this watershed, and there has been no pleading filed or argument until today that there are not. The record is clear, there are.

So that ought to be made certain.

THE COURT: Specifically, most clearly, the violations that you point to are the most clear violations, putting aside WHO standards -- I'm not sure I want to be the first in the United States to adopt WHO standards, unless you show me that I should. The most clear violations are the

indicator bacteria.

MR. BULLOCK: Correct. And those are in the record and are very clear.

So second of all, as to the violations of water quality standards, in fact, there are signs posted on these waters warning people of the risk. And we haven't asked this Court to close the river. We've asked this Court to take the steps necessary to clean up the river, which is a big difference.

THE COURT: Is that actually in the record here?

MR. BULLOCK: What?

THE COURT: Signs not to swim because of possible bacteriological contamination?

MR. BULLOCK: There is -- no, because it wasn't raised in these, but there is testimony in the record, particularly testimony from former Secretary Miles Tolbert testifying about the posting of those signs.

We anticipate there will also be testimony from Mr. Fite concerning the posting of the signs warning of the risk.

THE COURT: Of what?

MR. BULLOCK: Of the risk of the bacteria loads in this water.

THE COURT: I just wanted to be clear.

MR. BULLOCK: Okay. Judge, I think that there's a

little bit of fast dealing here in terms of the issues of the cyanobacteria and the water quality standards that were just discussed. That is where Mr. Jorgensen says that there's no cyanobacteria in drinking water.

Our case is not based upon, and what we have been talking about, is not based upon the cyanobacteria being in drinking water. It is the kids swimming in the lake, not --

THE COURT: I don't think that was suggested --

MR. BULLOCK: The standard is put up there, and the statement was as to drinking water. You might ask for that to be put up again. Now --

THE COURT: I see. Well, I had understood your concern to be recreational.

MR. BULLOCK: Right. But the standards that Mr. Jorgensen put up dealt with drinking water. And I urge the Court -- you know, we've already -- we have run into this issue of the six-hour hold times under the drinking water standards have somehow been imported universally to negate the reliability of bacteria data generally.

Now what I'm seeing is that the defendants are trying to get the Court to take another step down that slippery slide in terms of taking drinking water standards and putting them on the lake.

THE COURT: I don't believe it was drinking water standards. It was, as you said, Clean Water Act, which is

point source. And you said --

MR. BULLOCK: Actually --

THE COURT: I believe there were some other standards outside of Clean Water Act.

MR. BULLOCK: Actually, I got it backwards. The drinking water standards was a 30-hour hold time. Somehow we've ended up with the point source level for six-hour hold times. But that's a slippery slope. The Court has gone there.

What I'm trying to warn the Court is to listen carefully in terms of what standards people are talking about. What Dr. Teaf is talking about are the standards for cyanobacteria in recreation waters.

And then they can get into the issue of the fact that there is some issue with the way that the microcystins can survive through the treatment process. That's another issue that will be handled in McGuire perhaps.

THE COURT: But just to be clear -- I don't know that we need to do this, but just to be clear, you're not attempting to use Teaf to show causation or source.

MR. BULLOCK: Well, the causation piece of Teaf is the TMDL which, as I said, that is one of the accepted methods to prove causation or source, however you wish to say it. But that is but part of a more complex circumstantial case regarding causation.

THE COURT: Other than TMDL, is your intention to use Teaf in any way on causation or source?

MR. BULLOCK: No, Your Honor.

THE COURT: All right. Does that satisfy the defendants? Mr. Ryan or Mr. Jorgensen.

MR. JORGENSEN: I suspect we have two responses, Your Honor. Can I start -- if I may, I feel like I need to defend myself. I think I've just been accused of -- the quote was fast dealing. I want to say that's not true. I try to be very careful in what I say to the Court and take my responsibilities very seriously.

Yesterday I pulled up and would be glad submit to the Court, although it's actually already attached to the relevant motions, the bacterial holding time motion, the fact that there was a standard from point source discharges, then there was EPA's manual from recreational waters, then there was Oklahoma Safe Drinking Water Act materials.

And that is the way it is, and I've not tried to mislead the Court on that in any way.

THE COURT: It was the Oklahoma Safe Drinking Water Act that had three 30-hour hold time limits, correct?

MR. JORGENSEN: I believe there were just two, but I could be wrong on that. But you're exactly right, Your Honor. And the relevant ones, for salmonella, for E. coli, for total coliforms, fecal coliforms, as you pointed out, we had a back

and forth were six.

I still have it on my computer and can put it back up. But I just did not want to leave the record with an allegation of "fast dealing."

Then the second thing is, I was accused of fast dealing on standards for cyanobacteria. Let me go through that again.

I believe Mr. Bullock conceded when he was up here before that there is not a numeric standard for cyanobacteria or cyanotoxins in recreational drinking waters. There isn't.

There is this general narrative standard: Don't have toxic materials in the water, which could mean anything. But there is not a numeric standard. And without a numeric standard, it hasn't been violated.

And now I've just put up the fact that, as Dr. McGuire points out from the panels he sat on at EPA, EPA has considered whether there should be a drinking water standard for cyanobacteria and cyanotoxins, and has concluded that there should not be because there's insufficient evidence that they pose a risk.

So I've cleared that up. I have really not tried to mislead the Court in any way. And I welcome any questions you have.

THE COURT: TMDL.

MR. JORGENSEN: On that, I will defer to my

colleague.

MR. RYAN: First of all, there hasn't been a TMDL conducted in the Illinois River Watershed. You'll recall from the preliminary injunction hearing, we showed how the State of Oklahoma had done TMDLs all over the state and completely surrounded the IRW, and that the conclusion from each and every one of those TMDLs was that cattle was the problem.

As I understand it now, we took the deposition of Mr. Dershweiler, and he indicated that there is some activity now going on by the State to do a TMDL.

So what I think Mr. Bullock was talking about is that Dr. Teaf claims to -- in conjunction with Dr. Engel, I believe, that some kind of a quasi TMDL of their own that is not a governmental or regulatory one, obviously, and it's highly questionable. We haven't really gotten into that today because, you know, when I asked Dr. Teaf to support some of the conclusions which he was making about the fecal coliforms, he didn't know when calves were born and he didn't know how long, you know, cattle were on pastures and things like that, so it was a little bit hard to cross-examine him about it. But he had claimed to have done this sort of TMDL with Dr. Engel.

I don't know how, though, a TMDL would in any way establish that, A, there's pathogens, actual pathogens in the water or that, B, it came from these poultry operations. The TMDL simply makes estimations on a regulatory basis as to the

loads of whatever you're studying to the watershed.

THE COURT: I guess more --

MR. RYAN: Maybe I'm not answering your question.

THE COURT: More practically -- and I should ask this of Mr. Bullock -- how would Dr. Teaf sponsor any TMDL, whether it's being done now or has been done in the past?

MR, BULLOCK: Defendants have not attacked, as I understand their motion, the methodology that he used to do that. And so --

THE COURT: That he used to do that?

MR. BULLOCK: That he -- he and -- with the assistance of Dr. Engel conducted the study, which is a TMDL study.

THE COURT: Recent?

MR. BULLOCK: Yes. And that's in his expert report. Now, they have questioned, as the Court has heard, the issue of causation, but the way that these work and the very TMDLs that they are citing which point to cattle in other watersheds which I say -- which I recognize is irrelevant, but in terms of the acceptance of the methodology, that is the methodology, and that's what we will present is that methodology.

THE COURT: Well, that question went through my head, to the extent that they're used in the context of cattle, why couldn't it be used in the context of poultry. Well -- but that issue is not before the Court today, correct?

MR. BULLOCK: They have challenged the causation piece, but they haven't challenged the technique of preparing the TMDL.

MR. RYAN: Your Honor, I could be mistaken, and I probably ought to take a moment to look more carefully, but I don't believe there's any mention of TMDLs in Dr. Teaf's expert report.

THE COURT: If there is, I missed it; but then there's a huge volume of materials here.

MR. RYAN: May I look --

THE COURT: Yes, sir, you may.

MR. RYAN: I looked as quickly as I could after Mr. Bullock made that statement, and I don't see it in here.

MR. PAGE: May I explain, Your Honor?

THE COURT: Yes, sir.

MR. PAGE: Dr. Teaf, as part of his regular 26(a) report, did a mass balance for bacteria. Now, when you do a TMDL for -- that's the EPA program for nonpoint sources, total maximum daily load. So the EPA looks at all types of contaminates for TMDLs, including bacteria. And the EPA has a methodology to count bacteria.

Dr. Teaf did a mass balance of bacteria that follows the EPA's TMDL criteria for counting bacteria. So, unfortunately, the word "TMDL" was used as a regulatory basis, but the analysis is -- the more precise statement is Dr. Teaf

did the equivalent of a TMDL for the Illinois River watershed for bacteria.

Now, why is that causation? Because under the EPA laws, the Clean Water Act for nonpoint sources, TMDLs are how the EPA determines what are the sources, the nonpoint sources in a watershed.

So because EPA finds it as a valid proof of source, we did an analysis, Dr. Teaf did an analysis here as to bacteria for proof of source also.

THE COURT: Has that analysis been provided to the defendants?

MR. PAGE: Yes. It was in part of the original 26(a) report, and it hasn't been challenged in a Daubert context.

THE COURT: Well, I suppose the answer, from my point of view is, that perhaps this is a battle that has yet to be fought. But to the extent that it's not placed before me today, I don't know that I have anything to decide in that regard. Mr. Ryan -- as to TMDL or any challenge to it.

MR. RYAN: You know, again, I don't want to say something, say that -- accuse Mr. Page of saying something incorrectly. I don't know what he's talking about, this Rule 26 report that talks about a TMDL.

I've looked through Dr. Teaf's report. I don't see anything in there. If there is such a disclosure, I would like to see it. We don't necessarily need to take up Your Honor's

time with it. I'll deal with that after this hearing.

THE COURT: All right.

MR. RYAN: But I would simply say to Your Honor that, as I mentioned in my presentation, that to the extent he did a TMDL -- and we did talk about it at his deposition, so I'm not claiming complete surprise because he did discuss it in his deposition somewhat when he was asked about this, or at least he brought it up.

But what he did was simply determine the amount of fecal coliform that comes out of cows, it comes out of chickens, it comes out of geese, it comes out of turkeys, etcetera. He had nothing to do with fate and transport and nothing to do with what goes in the water. He admitted that in his deposition. And I had slides put up on the screen to that effect.

So even if he did some kind of quasi nonregulatory TMDL that's not disclosed fully, I don't think it establishes what plaintiffs suggest it does.

THE COURT: It's not clear to me whether it was a TMDL -- or Mr. Page used the term the "equivalent" of a TMDL. I'm not sure what that is, but I suspect that you'll find out.

MR. RYAN: Thank you, Your Honor.

THE COURT: Anything else with regard to either of the pendant witnesses, for lack of a better term, McGuire and Sullivan?

MS. XIDIS: Your Honor, I'm Claire Xidis for the State of Oklahoma. And we really haven't had a chance to present our motion on Dr. McGuire, and I'd like to do that --

THE COURT: This is it.

MS. XIDIS: -- in an attempt to draw kind of a clean slate here, as we start with Dr. McGuire. The State's motion is actually pretty simple and straightforward on Dr. McGuire.

Dr. McGuire has training and experience in environmental engineering and has spent his career working in water treatment facilities.

As we heard Mr. Jorgensen mention earlier, he was indeed the director at one of the largest water treatment utilities in the United States. I suspect we'll hear some more about that from Mr. Jorgensen.

But the State is not challenging Dr. McGuire's qualifications to opine about processes for treating drinking water. The State is challenging the portions of Dr. McGuire's opinions that reach beyond that area and into human health assessments.

The State is also challenging those parts of Dr. McGuire's opinions which do not meet the reliability criteria of Daubert.

Dr. McGuire organized his report into five sections which present the five bases for the five opinions he's reached in this case.

The State is challenging Dr. McGuire's opinion No. 1 because methodologies he used in reaching that opinion do not meet the reliability requirements of Daubert and because his broad-reaching opinions stretch into areas beyond his expertise.

The State is also challenging opinion No. 1 because, in that opinion, Dr. McGuire reaches beyond his experience and training as an environmental engineer for water treatment facilities and into the field of human health toxicology.

Likewise, Dr. McGuire's opinions numbers 3 and 5 should be excluded because they are opinions about human health risks that Dr. McGuire is not qualified to offer.

First, Your Honor, I'll address opinion No. 1, which the State challenges on three grounds.

THE COURT: Just to be clear, you're not challenging 2 and 4; is that correct?

MS. XIDIS: That's correct, Your Honor.

THE COURT: Go ahead.

MS. XIDIS: The first ground for opinion No. 1, Your Honor, is that the statistical comparisons of total organic carbon data upon which Dr. McGuire relies are performed by another individual, and Dr. McGuire said he did not have the expertise to select the methodologies for this work.

In addition, defendants have not demonstrated that the methodology used in the manner it was used here meets the

Daubert reliability requirements.

Dr. McGuire claims that a statistical comparison of ICR, which is Information Collection Rule, total organic carbon data, which was collected in a national survey in 1997 and '98, to recent data collected from the IRW supports his conclusion that poultry waste application has no impact on the levels of total organic carbon in the IRW.

I have just a few slides, Your Honor, which are excerpts of Dr. McGuire's deposition, which were also attached to our Daubert motion.

At his deposition, Dr. McGuire testified that he did not perform this statistical comparison himself. He had someone else, Mr. Clifton Bell, at the private consulting firm where he used to work, determine what type of analysis to use and perform the statistical comparison because Dr. McGuire needed help figuring out what statistical methodology to apply and because, as he testified at his deposition, he is not an expert in statistical analysis.

Your Honor, I'll just read some of the highlighted language here. When Dr. McGuire was asked what Clifton Bell did in this case, Dr. McGuire explained:

"ANSWER: I provided five or six, I guess, datasets, data comparisons of trihalomethane, haloacetic acid, TOC data, and asked him to evaluate whether or not we could use parametric or nonparametric statistics to compare means or

determine if these datasets were from the same population or not. And the results of that are included in my expert report."

Further down, Your Honor, he explains that Clifton Bell actually chose what tests to use.

"QUESTION: And what was his answer?

"His answer was to use no nonparametric statistics because of the way the data was distributed, and that's why he chose what is called the Mann-Whitney U test, which was conducted on these six data pairs."

Further down, Your Honor:

"Why didn't you do the statistical analysis?

"I can do it. I'm decent -- decent at statistics, but not an expert. He is far better than I am and keeps up with it on a daily basis."

As the Tenth Circuit has explained, Your Honor, an expert cannot simply adopt opinions of another which are outside his own area of expertise. That's what Dr. McGuire has done with his opinion No. 1. He used statistical comparisons of data that he's testified were outside his expertise and used those as a basis for his opinion.

Defendants claim that Dr. McGuire supervised and directed the work of Clifton Bell, but his testimony during the deposition speaks for itself. He needed the expertise of someone with specialized knowledge in performing statistical

comparisons to make the most basic decision regarding what kind of analysis to do, that basic decision of parametric versus nonparametric, statistical analysis, a very basic baseline decision.

In addition, Dr. McGuire stated in his deposition that he had not performed this type of statistical analysis before.

"QUESTION: Have you ever done anything like that before?

"Nothing quite like this. Like I said, I usually, when I'm trying to do a statistical analysis, I've got maybe six or ten data points I'm trying to compare, not thousands. So it's a -- it's a whole new realm of statistical concerns, which is one of the reasons why I consulted with Clifton because he has done this before."

Nevertheless, defendants argue that Dr. McGuire has done such analysis in the past, and they cite to a group of articles. However, each of these articles has one or more authors than Dr. McGuire. Some actually have up to six authors. Some of these articles contain no statistical analysis and some have some statistical material contained in them, but it's unclear which author performed the work. And defendants offer no explanation beyond their simple listing of the articles.

In any event, the fact that Dr. McGuire co-authored a

small group of articles containing simple mean and median measurements which are parametric, none of which are the test that was performed here, Your Honor, hardly qualifies him as an expert in this area and certainly does not overcome his own testimony that he needed help in the analysis in this case because it was beyond his abilities.

Furthermore, in defendants' response, there is no cite to any evidence that supports Dr. McGuire's position that this method of comparison of IRW and ICR datasets that are different in terms of size, time, purpose and location is reliable under Daubert.

Defendants also offer no authority that this type of comparison supports the total exclusion of a potential source of total organic carbons in the waters of the IRW.

The only justification offered by defendants is a new declaration attached to the response in which Dr. McGuire claims, without citation to any authorities, that because the total organic carbon levels in certain lakes in California changed little in a 20-year period, that the data comparison performed by Mr. Bell is appropriate. This anecdotal justification makes little sense, but more importantly, it simply does not meet the standards of Daubert.

Your Honor, the second reason the State believes that opinion No. 1 should be excluded pursuant to Daubert is because Dr. McGuire claims that scientific literature is a basis for

his opinion that poultry waste has no impact on the levels of total organic carbon in the IRW. But the conclusions in that literature are contrary to Dr. McGuire's conclusions.

In fact, the literature he cites recommends limiting agriculture runoff into watersheds as a method for reducing disinfection byproduct precursors in water supplies.

In explaining the background for their work, these authors explained that the sources of total organic carbon have indeed been a difficult question to answer.

THE COURT: Ms. Xidis, we're at the end of a long day. You're going to have to slow down because we have had one court reporter the entire day, so...

MS. XIDIS: I apologize.

In explaining the background for their work, these authors explain that the sources of total organic carbons have indeed been a difficult question to answer, but then these authors answer that question with suggestions for impaired water supply management, specifically the management of nutrient loading.

In the Bukaveckas article, the conclusion there --

THE COURT: I think we need to take a recess here. We also need to talk about, because it's a quarter of six, how we intend to proceed here. We've got quite a number of these Daubert motions that have not been decided.

Frankly, you-all are taking me beyond the edge of

what I am comfortable in ruling on just here today. And I suspect that what we need to do here is quickly wrap up the argument with regard to these three motions.

I will look at them, try to digest them a bit better, rule on those, and then discuss whether or not the Court can simply issue rulings on the remainder.

MR. JORGENSEN: Your Honor, on that point, we have yet, either side, to get into Dr. Sullivan, and I believe he's actually completely unrelated to the two that have been contested, so we could just finish McGuire and be done.

MS. FOSTER: I would disagree; he's very related to the subject. That's how he got grouped --

THE COURT: The problem is I've got a major antitrust case on Friday. I can't hear any -- I don't have any more time for you. So I don't know --

MR. JORGENSEN: I propose we just finish McGuire and be done.

THE COURT: Let's take a recess, do that and we'll discuss how we're going to discuss the rest of them.

(Whereupon a recess was had.)

THE COURT: Ms. Xidis.

MS. XIDIS: I'll try to slow down and abbreviate my comments in the interest of time.

The last topic I was addressing was the literature cited by Dr. McGuire. And the point in here I want to make is

that it came out in his deposition that he had cited some literature in which the conclusions completely contradicted the conclusions he reaches in opinion No. 1.

There is a premise that determining sources of TOCs is a complicated issue, but in the literature that he cites in his report, those authors make very clear recommendations and suggestions about things that can be done, specifically watershed management issues and limiting nutrients, which contradict his own conclusion.

So it became evident during his deposition that he had not even read the conclusions in these articles. He rejected them. He recoiled from them. And it was a little bit incomprehensible, actually. So if he hasn't even read the conclusions in these articles, they can hardly be a reliable basis for his opinion No. 1.

Next, Your Honor, as to opinion No. 1 -- next slide, please -- opinion No. 1 is not just to drinking water, but he's says to the waters of the IRW. He says there's no endangerment to human health in the waters of the IRW.

And the problem with this opinion, Your Honor, is that it takes Dr. McGuire outside of his area of expertise, which is the water treatment facility. It takes him to edge-of-field samples, limnology, hydrology, other areas where he simply is not qualified to opine.

Is he qualified to opine about the processes for

treating the water in the plant? Yes. And the State is not challenging him on those opinions. But he can't go further into the source-tracking issues. Defendants claim that he is qualified to do that. But in his deposition, we specifically asked him about this. He was only able to come up with two examples when he'd done this type of work, and they were markedly different from what's going on here.

One of those is the Open Pit Asbestos Mine we discussed in our reply brief where the water utility already knew exactly where the contamination was coming from and what it was. The other, I believe, was the San Joaquin water -- San Joaquin Valley, and the utility was doing some research there.

Dr. McGuire specifically testified that he did not do this type of source analysis in that watershed, and he could not remember other details of his work there. So we do not think that qualifies him to opine into this kind of source tracking area, which he tries to do in his opinion number one.

Next slide, please.

Finally, Your Honor, is the State's challenge to Dr. McGuire's opinions which, again, reach beyond his engineering, in plant, how do I filter this, how do I meet the standard experience and go into human health.

As we can see here on this slide, Your Honor, he was asked point blank about his qualifications to discuss these topics at his deposition.

"QUESTION: And we may have covered this before. Have you -- have you conducted any scientific or medical research on the health effects of disinfection byproducts?

"No.

"Are you qualified to give opinions on risks to human health from ingesting DBPs?

"No."

Let's compare that to his opinion No. 1, 3 and 5, which are listed below. In each of those, he does offer opinions on human health specifically.

"It is also my opinion there is no eminent and substantial endangerment to human health associated with disinfection byproducts in drinking water served by IRW utilities."

He goes on and does exactly what he testified he is not qualified to do.

Defendants are going to try to rehabilitate him on this and claim, oh, you know, he worked at the biggest water utility in the nation. He's done this for 35 years.

When we look at his CV, Your Honor, when we look at his publications and his work experience, he has not done human health work, he has not published on those issues, he has not presented on those issues. It's not part of what one does as a director of a water utility.

His publications deal with filters and corroded pipes

and things of that sort. But he's simply reaching too far.

That's what -- all the State is seeking to do with this motion, Your Honor, is to box him in his appropriate areas of expertise.

He can talk about those processes in the plant. He can talk about the standards and what those standards are, but he is reaching too far when he goes into human health and when he goes into source tracking. And also his reliability gets really shaky when he starts talking about statistical analysis that he cannot do without the expertise of others.

With that, Your Honor, I'll rest unless you have any questions.

THE COURT: No. Thank you very much.

Given that we're at six, how much longer -- if we were to conclude this grouping of experts, how much longer would the argument take us?

MR. JORGENSEN: I believe I could wrap up McGuire in 15 minutes, Your Honor, and then I would propose that we end at that point.

THE COURT: Well, there's been an objection there with regard to Sullivan. And given that I want to treat everyone within the grouping similarly, I'd be disposed to hearing whatever argument with regard to Sullivan before ruling.

Perhaps the only way to do this because, frankly, I

don't have time here -- I've got to get ready for this antitrust matter. Perhaps what we do is just start cutting into our summary judgment argument time. We'll continue this on the first day of summary judgment, and it means less argument for summary adjudication, but so be it.

Mr. Jorgensen.

MR. JORGENSEN: I quickly surveyed the table, and the defendants would have no objection to that.

THE COURT: Mr. Bullock.

MR. BULLOCK: We certainly are agreeable to that, or you might consider referring this to the magistrate.

THE COURT: No, it would just be -- I guarantee you it would be appealed. It would just further delay the trial. We're going to start the trial in September.

Any other ideas?

MR. BULLOCK: No, sir.

MR. GEORGE: Your Honor, one proposal that might take one matter off the Court's hearing docket. The Taylor Daubert motion, which is docket No. 2078, a motion filed by the defendants, is one that the defendants are more than comfortable with the Court deciding on the papers, if the Court is comfortable.

THE COURT: Well, I don't know -- is there any absolute requirement that I hear argument as to all these? I mean, it's lawyer talk.

MR. GEORGE: I don't believe there is, Your Honor. I believe it's within your discretion.

MR. BULLOCK: I think that it is within your discretion. We have spent, here it is two days really, on attack experts of some of our key witnesses.

Dr. Taylor is another one of our truly key witnesses that we truly feel like, that given the technicalities and the number of different specialties, that some public airing of that should -- would benefit the Court.

THE COURT: Let me just tell you, having looked at Taylor, this is not a Daubert analysis; but in terms of the first prong of 702, frankly, testimony on how the poultry industry works would be helpful to the Court. So my gut feel is I'd like to hear it if he meets Daubert. But I take it the Daubert motion has to do with reliability and relevance, correct? I mean, clearly relevant, right? It's probably predominantly a reliability analysis.

MR. JORGENSEN: It is, Your Honor.

MR. ELROD: It is, Your Honor. The third issue is -- he opines on three things, Your Honor. John Elrod, madam court reporter.

The third opinion is moot because it has to do with unjust enrichment. Do you agree with that, Louis?

THE COURT: Maybe not, if I reconsider.

MR. BULLOCK: And that's an equitable defense, Your

Honor. You get unjust enrichment only if your claims at law are dismissed. We can brief that, but that's my recollection of unjust enrichment is, it's one of those little common law back waters that -- in terms of progressing on this, though, I would be willing to submit our Churchill motion on -- I'm getting some backfeed, but I think we'll -- we can submit that one on the brief, Your Honor.

THE COURT: But we also have Grip, Davis, Clay and King. I don't intend to rule on McGuire, Teaf and Sullivan without further argument. But is there any strong objection to ruling on Taylor, Grip, Davis, Clay, Churchill and King without argument?

MR. JORGENSEN: I believe on King, we would like argument, Your Honor.

MR. BULLOCK: I think both sides would like it on King. And also I think on your list was Taylor. As I said, even though -- we just -- it's important to us that we not have a misfire on Taylor. We'll try to make that quick, but we're -- we want to be sure that we don't get off the wrong track.

THE COURT: And correct me if I'm wrong, but if the Court reviews these and determines that it can rule on these matters without hearing, is there any law precluding me from doing so?

MR. BULLOCK: I don't believe so, Your Honor.

MR. JORGENSEN: Defendants don't believe so either,

Your Honor. The only exception I would make is I would like to give the McGuire response since the McGuire --

THE COURT: Oh, there's no doubt. And if that wasn't clear, that's exactly my thought.

Everyone is -- at least the Court is a little worn down after these two days, so I think a little respite from this would help clear the minds. And we do need to set a deadline because we're fast approaching trial here. We need to set a deadline for any motion to reconsider or motion to strike the jury demand. Who wishes to broach the subject?

MR. BULLOCK: We will have ours filed on Monday is our target date, Your Honor.

THE COURT: Response by a week later?

MR. GEORGE: That would be fine, Your Honor.

THE COURT: Then a reply a week later?

MR. BULLOCK: Yes, Your Honor.

THE COURT: Where does that put us?

THE CLERK: That puts us on the 17th of August.

THE COURT: That's the workday after we complete the summary judgment.

THE CLERK: Summary judgment hearings are currently set for the 13th and 14th, and should we want to be able to address it, the response -- motion filed on the 3rd, response on the 10th.

THE COURT: Can you reply within three days after?

MR. BULLOCK: Yes, Your Honor, we can do that on the reply.

THE COURT: On the 13th, a reply. And that potentially would -- well, not potentially. That would put it at issue during the time we're together on the remaining Daubert motions and summary judgment motions.

MR. GEORGE: Your Honor, the other motion that has been discussed is the motion to strike the jury demand. The defendants would be amenable to the same schedule, just reversed, with us filing the motion, plaintiffs responding.

MR. BULLOCK: Monday, a week later.

THE COURT: So basically grappling with a number of the same issues perhaps.

MR. GEORGE: We feel that's distinct in the sense that the motion to strike the jury demand is predicated on the cases as it exists today. And, obviously, the State is seeking reconsideration to turn the clock back, but they're interrelated, obviously.

THE COURT: I see what you're saying. Very well. We'll establish the same briefing schedule for the motion to strike jury demand.

Is there anything else we can do here this evening?

MR. JORGENSEN: Your Honor, Dr. McGuire, as part of his work in drinking water treatment, made a glossary of terms and how they're spelled. May I submit -- not to you, but to

the court reporter -- can I submit it to Howard and then to the court reporter?

THE COURT: Why don't we have the plaintiffs just take a look at it very quickly, make sure it's satisfactory.

MR. JORGENSEN: Page 3 of his report.

THE COURT: Make sure there's no issue there. Obviously the glossary and the dictionary that our reporter produces here is going to carry us through trial, so that's very important. Very well.

MR. TUCKER: Your Honor, may I ask a question? I'm not sure where we ended up on what's going to be argument and what's going to be submitted on the papers with respect to the pending motions regarding disqualification of witnesses regarding experts.

THE COURT: Nothing --

MR. TUCKER: Nothing --

THE COURT: Nothing further will be submitted.

MR. TUCKER: I misunderstood. We were discussing which would be submitted just on the briefs that's already filed.

THE COURT: The Court would take a look at them and decide whether or not it can decide these additional subsidiary -- I don't want to call them subsidiary motions.

Other than the grouping that we're wrestling with right now -- McGuire, Teaf and Sullivan -- the Court was going

to take a look at Taylor, Grip, Davis, Clay, Churchill and King; and if it felt like it could rule on those motions without a hearing, it would do so.

MR. TUCKER: If I may, Your Honor, with regard to Dr. Davis, Dr. Davis only, the one thing that the Court does not have before it is Dr. Davis' second errata which was furnished to the parties on June 29th. It was not filed because it wasn't a part of the pleadings that were part of the Daubert motion. I'd like to offer that as an exhibit for the Court to consider along with Dr. Davis' -- the motions pertaining to Dr. Davis.

THE COURT: A second errata?

MR. TUCKER: Yes, Your Honor.

THE COURT: That was filed when?

MR. TUCKER: That was filed -- or delivered on July 1st. It was signed June 29th and delivered on July 1st to Mr. Page and Mr. Garrin. And it is a true errata. It analyzes the -- some data that was improperly downloaded and was then properly downloaded and corrected. It makes a correction to the report.

THE COURT: Any objection?

MR. BULLOCK: No, Your Honor.

THE COURT: Very well. And has this -- ought this second errata be marked and filed with the Court, or how do you -- because it's not a part of the record.

MR. TUCKER: I was thinking about offering it as an exhibit at the time of the argument on the motion regarding Dr. Davis.

THE COURT: Yes, sir.

MR. TUCKER: So could I offer it as an exhibit to the Court now?

THE COURT: You certainly may. Let's mark it as -- Mr. Overton, as Court Exhibit 2 for this hearing.

MR. TUCKER: Thank you, Your Honor.

THE COURT: And without objection, Court Exhibit 2 is admitted pertaining to the motion numbered 2064 on Davis.

What else can we attend to this evening?

MR. JORGENSEN: Defendants are ready to wrap up the evening, Your Honor.

MR. BULLOCK: We're ready.

THE COURT: All right. We will see you the first day of our summary judgment/Daubert hearing on the -- what is it, 13th --

THE CLERK: 13th and 24th of August.

THE COURT: 13th of August. We're adjourned.

(PROCEEDINGS CONCLUDED.)

REPORTER'S CERTIFICATE

I CERTIFY THAT THE FOREGOING IS A TRUE AND CORRECT TRANSCRIPT OF THE PROCEEDINGS IN THE ABOVE-ENTITLED MATTER.

S/Terri Beeler
Terri Beeler, RMR, FCRR
United States Court Reporter